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ABSTRACT

This volume describes outstanding community college programs corresponding to the four categories in which programs were originally submitted to the National Council of Instructional Administrator (NCIA) Annual Exemplary Instructional Program Awards. Section 1 includes the description of two programs that won the award for Best Program Using Technology with Underprepared Students. Section 2 includes the description of one program that won the award for Best Program Using Technology with Transfer Students and two programs that won honorable mentions. Section 3 includes the description of two programs that won the award for Best Program Using Technology with Occupational Students. An honorable mention is also contained. Section 4 includes the description of one program that won the award for Best Program Using Technology in Staff Development. In all, 78 programs are described, including abbreviated descriptions of all programs that were submitted for consideration. Each program cites the institutional contact person, the college address and phone number, and the name of the CEO. An index of participating colleges is contained at the end of the book. (VWC)

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Community College Exemplary Instructional Programs Volume VII

1995–1996

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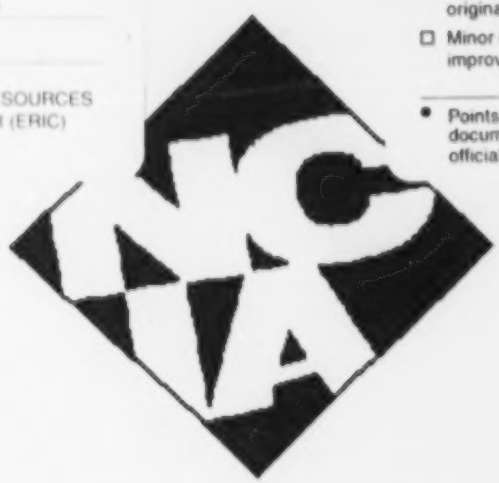

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Community College Exemplary Instructional Programs Volume VII

1995–1996

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An Affiliated Council of the AACC

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INTRODUCTION

Community College Exemplary Instructional Programs, 1995-1996 is the annual volume of outstanding academic programs published by the National Council of Instructional Administrators (NCIA).

This present volume contains four sections corresponding to the four categories in which programs were originally submitted to NCIA for its Annual Exemplary Instructional Program Awards. These awards are presented at the annual AACC convention held each April.

Section I includes the description of two programs which won the award for best program using technology with underprepared students. Edited versions of all other entrants are also included.

Section II includes the description of one program which won the award for best program using technology with transfer students and two programs which won honorable mention. Edited versions of all other entrants are also included.

Section III includes the description of two programs which won the award for best program using technology with occupational students. An honorable mention is also contained. Edited versions of all other entrants are also included.

Section IV includes the description of one program which won the award for best program using technology in staff development. Edited versions of all other entrants are also included.

In all, 78 programs are described herein.

Each program cites the institutional contact person, the college address and phone number and the name of the CEO. An "Index of Participating Colleges" is contained at the end of the book.

Programs were nominated as exemplary by the participating colleges. Each college determined the category or categories in which to compete. Program narratives were restricted to a maximum 1000 words. For this volume some editing for style and length has been done.

Programs submitted were required to address three criteria in their narrative:

1. Must identify how the program is innovative and creative.
2. Must provide measures of program success.
3. Could be adopted/adapted by other two-year colleges.

In certain instances colleges chose to address each of the criteria in turn within their narratives. In other instances colleges generally covered the criteria, but with no direct reference to them.

Beyond presenting its awards, the National Council of Instructional Administrators makes no judgment on the merit of individual programs, but is pleased to include programs as submitted. Program evaluators were selected by the NCIA Executive Board.

The Council is pleased to provide, as part of its membership services, a copy of this publication to institutional members. On a periodic basis the Council publishes other materials of interest to academic administrators. A quarterly Newsletter is also distributed to all NCIA members.

Additional copies of this publication are available for $15 each. Orders may be sent to NCIA, P.O. Box 198642, Nashville, TN 37219-8642. Checks should be made payable to NCIA.

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SECTION I

PROGRAM AWARD WINNERS

Innovative Learning Center
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The Innovative Learning Center, established on the Eastern Campus of Cuyahoga Community College in September 1994, offers computer-assisted instructional support via the INVEST curriculum to a diverse population of under-prepared and developmental students.

INVEST is a comprehensive curriculum developed specifically for adult learners and youth who have not been successful in traditional educational environments. Lessons are based on situations and information encountered by adults in their day-to-day lives. The overall program focuses on three objectives key to adult educational successes: learning to learn, problem solving and critical thinking. INVEST incorporates three learning areas: 1) Levels 0-3, 2) Levels 4-8 and 3) Levels 9-12.

A unique focus of the Innovative Learning Center is the coordination and evaluation of Project INVEST, a collaborative partnership of Cuyahoga Community College, The League for Innovation, American College Testing Service (ACT), the INVEST Learning Corporation; and a dozen other community colleges across the country. The purpose of Project INVEST is: 1) to evaluate the use of INVEST software in assisting community colleges to achieve their goals in development education, 2) to evaluate various implementation models of INVEST and 3) to evaluate the role an integrated learning system can play in accomplishing the college's mission with under-prepared students.

The Innovative Learning Center has served 537 students during the last 15 months. Of that number, 348 were college students who were enrolled in Developmental Math and English classes, English as a Second Language, and the LPN program. There were 189 students who were enrolled as a result of contractual services that included a workplace literacy program for employees of the state of Ohio called the Personal Enrichment Through Education (PETE-Program), Veterans Upward Bound, the Summer Youth Program (funded by the County Department of Human Services) and students who pay tuition for the GED, Proficiency Test Preparation, and the Math/Reading refresher course. Currently, in the Winter Quarter, there are 141 students in the Center.

Preliminary data from Project INVEST indicates the following measures of success that include: 1) student drop rates are significantly better than the average drop rate of 15.3 percent; 2) students felt that using INVEST made learning material easier; 3) 63.2 percent felt that the INVEST lessons were a good fit with other classwork; 4) 72.1 percent said that they would enroll in an INVEST class again; 5) the GPA for

students in the Developmental Math League Project at Cuyahoga was 2.03 as opposed to the average GPA of 1.91 for the College's Developmental Math Students and 6) the GPA for African-American students in the Developmental Math League Project at Cuyahoga Community College was 2.12 as opposed to the average GPA of 1.57 for African-American students in the College's Developmental Math classes. A final report will be completed for the League Project in the Spring of 1996.

Other successes include a 90 percent pass rate for the GED students and a 80 percent pass rate on the Ohio Proficiency Test for youth who were enrolled in a Summer Proficiency Test Preparation Program in the Innovative Learning Center. In addition, the staff of the College's LPN program credit the use of the Center by the LPN students for the 91 percent pass rate in the LPN State Licensure Exam. The LPN students use the INVEST System to practice keyboarding skills and other computer literacy skills which are needed to take the computerized State Boards as well as an adjunct for enhancing basic skills in math and reading. The Compton's Encyclopedia, which is a third-party software on the INVEST System, is used by the LPN students as an adjunct for the obstetrics and pediatrics portion of the LPN program.

College faculty and staff of the Innovative Learning Center continue to design, develop and implement a variety of applications and teaching methods in the Center. The INVEST System can easily launch a variety of third-party software which includes Harper-Collins Math, Sensei Algebra, and English Express. The Innovative Learning Center incorporates the INVEST System along with audio and videotape, television, printed material and one-on-one tutoring. Interns from Cleveland State University's Masters Program in Adult Education use the Center as a learning site.

The design of the Innovative Learning Center has been replicated at several community colleges across the country. These colleges are involved in The League for Innovation Developmental Education Demonstration Project.

In light of the current usage and successes of the Innovative Learning Center, collaboration with other institutions and agencies is well under way. The College will expand the use of the Innovative Learning Center to all three campuses and will make the INVEST Project design a key component in the use of computers and technology in serving under-prepared youth and adults in Cuyahoga County.

Spanish Colonial Architecture in America

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Textbooks and instructional materials for the humanities courses emphasize mainly European and North American art forms. No or very little reference is made to the art forms of Latin America.

The high attrition rate for minorities, specifically Hispanic and Black students, is well documented. One of the characteristics of academic high risk students is lack of self esteem.

If the goals of the humanities courses are to impart knowledge and the wisdom of the ages, to improve intellectual skills, to eradicate prejudicial ignorance, and to cultivate the courage to search for truth, we must not only expose our international student body to the European cultural experience, but also to a broader cultural representation.

By making a direct correlation between the universal principles and the development of a familiarity with their society's history and architecture, the students will be able to better understand these principles and at the same time feel proud of their roots. The program contributes to help build the individual self esteem and a greater appreciation of their cultural heritage.

Through a pedagogical approach which recognizes the students' different learning styles, this project utilizes multimedia technology (text, audio, full motion video and computer graphics) to survey the architecture of colonial Spanish America. On the computer screen, this module explores the Pre-Columbian cultures' architecture, along with a chronology of events and explanations of mutual influences between Spain and the Americas.

Interactively, the instructor can choose to discuss the architecture of any country at random, since a large map of the Americas is the springing board on the computer screen. When exploring a particular country, the flag of the nation along with a map are always present on the computer screen. High resolution imaging technology was used to digitize hundreds of slides and photographs of historic architecture from the receptive countries. Some important architectural details can be accessed by clicking the mouse at specific points on the images. One of the most striking aspects of this module is the inclusion of a glossary of architectural terms which can be accessed from the program's text. Every term in the glossary is called out by an audio file and pictures or graphics to illustrate each concept. This way, even those faculty members unfamiliar with specific architectural terminology can utilize the program.

Academic Achievement Center
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Contact Persons: Joe Millsap, Nancy A. Kalman

Developmental reading and writing students at Ozarks Technical Community College use the Internet to exchange e-mail messages with prearranged reading and writing students from six different colleges around the United States. Through an on-going dialogue with their "E-pals" the under-prepared students are continually improving their written communication skills. The short and long term impact of this project gives students a definite purpose for writing and reading along with the exposure to e-mail technology. Students are given the opportunity to use their written communication skills in a unique forum such as e-mail, and those skills combined with other curriculum in the developmental writing courses, could be improved through practical application.

Success of this project can be measured in both a written and unwritten manner. It is difficult to measure attitude, but when students are observed arriving 30 minutes before class time to check their e-mail, it is obvious that they are anxious to get started. The CTBS (Comprehensive Tests of Basic Skills, McGraw-Hill), Form A, is used by a majority of the students at the beginning of the semester to measure reading and writing skills. Towards the end of the semester students are given the CTBS, Form B, as a posttest. The results have reflected an improvement in reading or writing of almost 1.5 grade levels from the pretest to the posttest, but measurement does not stop at that point. Other elements, whether measurable or not, to consider include:

SHORT TERM OBJECTIVES FOR USING E-PAL:

- Apply a reading comprehension skill.
- Read with an intended purpose or goal.
- Write to a level of clarity and understanding.
- Exposure to technology that initiates the activities.
- Gain confidence as one learns to navigate through the procedures to the mailing system.
- Become more fluid in written conversation.
- Use e-mail for successful classroom related activities.

LONG TERM BENEFITS:

- Improve overall reading comprehension skills.
- Continue interest in technology that operates mailing system.
- Students will have access to the Internet and the World Wide Web through on-line county services at public library locations.
- Could use the Internet and Web access for future educational use.
- Confidence in writing continues to improve.

The number of students involved with this project at OTC will usually range from 40 to 70. If there are six other schools participating and each basically has the same numbers as OTC, then the total number of students that comprise the E-pal Project would range from 240 to 420.

Since computer labs are becoming more common on college campuses, the ability to adapt to E-pals is fairly easy. Many of the instructors who participate have different setups and situations to overcome in order for their students to go on-line. Each instructor could relate a story or two of what it took to access the Internet. For example, OTC is not technically ready to issue addresses to students. This was definitely a major obstacle. The solution to this problem was to apply for e-mail addresses from the county library on-line service. Through this type of address the student would use the computers in the Academic Achievement Center to access the county service and go on to the Internet. In addition, the students' e-mail address could be readily used at any of the county libraries that have e-mail capabilities.

The use of e-mail in the classroom situation has been enhanced by organizing it so the under-prepared student will not be overwhelmed by the technology and will make connections with students in other locations. All the instructors involved in the project forward their student addresses to the Academic Achievement Center at OTC. A master distribution chart is formatted so that each student will have at least one student in each location to correspond with.

Students initiate communication with one another by writing an introduction and personal profile and sending it to their E-pals. After the initial week the topics will vary from week to week. Students are given topics such as describing the geography or a tourist attraction that is unique to their area or may discuss current events. The important factor is that students are given a direction, whether it is a general or specific topic, that will allow them some boundaries.

The instructors must be conscious of the under-prepared students' writing abilities. Some students will start with a few sentences on the first few topics, but will gradually increase the length of the message as they become more at ease with the system and the other students they are writing. When students are given a few days to think about a topic, then they can approach the writing day in two ways: One, they can bring in a rough draft, notes, outline, or a word for word message to type on the mailing system. Two, they could sit at the computer terminal and type what is on their mind at that point in time. Some students may ask the instructor to proofread their writing before it is sent out to their E-pals.

This project has given students a sense of responsibility toward their reading and writing skills. It has shown them the powerful role that reading and writing skills play while communicating with other students in various locations. The project will continue to develop and prosper for the purpose of challenging students to improve their reading and writing skills in a unique environment.

Accent-Reduction Program
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One of the most significant new programs at Grossmont College in recent years is the Accent-Reduction Program, which has been developed and implemented by faculty in the Speech Department. This program responds to the communication needs of a dramatically increasing number of immigrant students at the College. While these students are intellectually capable of undertaking academic courses to prepare themselves for work in this country, their accents --while charming--often interfere with clarity of communication and can become obstacles to academic and employment success. Accents are particularly hard to modify if English is being learned as an adult, the case with many of our immigrant students.

Students who have difficulty making themselves understood are reluctant to participate in class discussions, to ask questions in class, and to consult with classmates and teachers. In the words of one student, "When I don't understand, I still don't talk because I afraid they don't understand me and they laugh." Students for whom English is not their native language clearly perceive the lack of clarity in communication as a major problem. And they are aware that simply learning to read and write in English is not enough. Some of the students in the accent-reduction program have completed their formal study of English and are driving from all over the county to participate in our accent-reduction program. They are testimony to the felt need for this program.

The Accent-Reduction Program is unique and highly successful in achieving results for students. It combines the use of computer and video equipment with individual and classroom instruction. The program has four components:

1. The Class. To participate in the program students must enroll in a two-unit pronunciation class. During class sessions instructors diagram and demonstrate the proper positioning of the articulators for the production of basic English phonemes. In each class session students practice making appropriate sounds and are given constructive suggestions.

2. The Conference. During the first two weeks of the semester the teacher meets with students individually or in small groups. An assessment is made concerning which sounds each student needs to work on during the semester. Each student is given a packet of material that includes a list of words and sentences that contain sounds which, for the student, are problematic. Students are also given visual aids which illustrate how the jaw, lips, teeth and tongue should be positioned for each sound.

3. The Video. In the Speech Lab students video tape themselves pronouncing assigned words and sentences which contain problematic sounds. The tape is then given to the teacher for review.

After reviewing the tape, and without erasing what the student has recorded, the instructor records comments and suggestions. Additionally, with the camera focused close up on the instructor's mouth, the instructor video tapes herself or himself pronouncing the same words and sentences the student recorded earlier. The tape is then returned to the student.

At this point the tape becomes a portable tutor. Students are free to view the tape at home or in the Viewing Center in the library as often as they wish. As the see and hear the teacher forming the words and sentences, the student repeats the same words and sentences. Because students can play the tape frequently, and because they both see and hear proper sound production, this is a highly effective technique. Students have commented that it's like taking their teacher home with them.

After an assigned period of time, students return to the lab, and without erasing previous input on the tape, video-record the same words and sentences. The tape is returned to the teacher and the entire cycle begins again. As students make progress with some sounds, new sounds are introduced. Because nothing is erased from the tape, each tape contains a record of the student's progress during the course.

4. The Computer. In addition to attending class and using the video equipment, students must work with a computer for at least one hour per week. Computers are located in booths within the Speech Lab. Each computer is programmed with accent reduction software. Although there are several variations and enhancements, the basic element of the program works as follows: a student selects the sound he or she wishes to work on. The computer then will say a word or sentence containing the selected sound. Next, the student repeats what the computer has said, and the computer repeats what it has said and what the student has recorded. By listening, the student can compare the correct pronunciation with her or his own pronunciation and adjustments can be made.

This program which combines teacher instruction with the use of computers and video equipment has proven to be highly effective. Because the video tapes contain a record of the student's work throughout the course, before and after comparisons are possible. These comparisons testify to the success of the program. Another measure of success can be seen in enrollment data. Enrollment in our pronunciation classes has tripled since the program was initiated.

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North Harris College has developed an Applied Learning Center to address instructional support needs of students in occupational-technical programs. This initiative is designed to provide instructional support courseware that engages students in reading and writing activities that are relevant to their particular occupational-technical field. The goals of the initiative are as follows:

1. to establish an Applied Learning Center providing multimedia computers capable of presenting computer-based instructional materials to the target student audience,
2. to train occupational-technical faculty groups in the instructional design process and in the application of Authorware software for producing computer-based instruction,
3. to develop and pilot lessons in contextual literacy.

To achieve these goals, occupational-technical faculty first work with a workplace literacy specialist to analyze the reading and writing needs of target students in each occupational-technical area. These work groups then develop diagnostic processes that measure specific reading and writing competencies. After assessing instructional needs within each program, the work groups develop or sometimes purchase, reading and writing materials relevant to the program. These contextual reading and writing materials are then made available to students in a flexible delivery system in a computer center.

Ten lessons have been developed by faculty and staff so far, including such titles as Computer Systems Information Vocabulary, Drafting Vocabulary, and Using the Phone Book and Zip Code Directory. Modules that are currently under development include such titles as Medical Vocabulary and Using a Textbook. In addition, the faculty work groups have identified some appropriate commercial courseware which has been purchased to augment the offerings.

The instructional support materials available in the Applied Learning Center are designed to provide students with relevant skills that they should have upon entry into a particular occupational-technical program. Students are assessed within the first three weeks of their entering a semester and are then given a list of computer-based lessons which they need to take. The lessons are available to the students according to the students' own preferred schedules, providing needed instructional support concurrently with a student's participation in his or her chosen program.

At the end of each program year, the newly developed lessons are pilot-tested. During subsequent semesters, students entering relevant programs are assessed. Thus far, the Applied Learning Center has continued to meet or exceed the program objectives, listed below:

1. to decrease reading and writing deficiencies in 70 percent of participating students by the successful completion at the 90 mastery level of three required reading and writing competencies in their occupational area,
2. to have 70 percent of the participating students complete other technical courses with a "C" or better,
3. to have 85 percent of the participating students perceive these lessons as relevant to their career goals,
4. to have 70 percent of the participating students enroll in additional technical courses.

In addition to the stated evaluation criteria, there have been additional indicators of the program's positive impact. For instance, participating students have been telling other students about the Applied Learning Center. The computer-based instructional materials have been made available to any student registered at the college, and now students other than the target audience are also profiting from the lab. The materials developed by the faculty work groups have met with high praise outside the College as well. Companies and high schools associated with the occupational-technical program advisory committees are interested in acquiring the courseware. Also, other colleges and agencies (such as SER--Jobs for Progress National, Inc.) have seen samples of the lessons at conferences and have requested to use some of the programs.

The Bridge Program
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The Bridge Program, an innovative educational program instituted by Indian River Community College in Fall 1993, provides a structured educational "bridge" and support network to improve the retention and success of at-risk students.

About 53 percent of entering college freshmen in the State of Florida require remediation in English, math, and/or reading before they are ready to enroll in college-level work. Analysis of this student population revealed individuals who were often discouraged with their progress since they did not have the opportunity to earn college credits as they completed remedial classes. Motivation was further diminished by lack of career goals and uncertainty regarding personal interests and capabilities.

Targeting these students, the Bridge Program utilizes a three-pronged approach incorporating applied academic courses, two new technology courses, and classes which build reasoning, critical thinking, study and time management skills.

Upon entering the program, students take the "Choices" career aptitude test to determine talents and aptitudes. During the two-semester 31-credit Bridge Program they take applied classes in English, math, reading, and physics; a class in practical

reasoning; and two career exploration courses: Introduction to Contemporary Business Technology and Introduction to Industrial Technology. Students also participate in a skills/time management component and a class in multicultural issues.

The technology classes are designed to provide practical activities related to available employment opportunities. The business technology course provides an historical perspective on the role of technology in American business, emphasizing the technological advances made in various business settings and specifically focusing on applications in accounting, finance, marketing, human resources, advertising, management, and information systems.

Academic and vocational subjects are blended in a non-traditional framework in the industrial technology course. Students examine the process of technological change and experience practical hands-on skill development through problem-solving and critical thinking.

The general education classes support the technical courses without he necessary reading, writing, math, science, and reasoning skills to build success. For example, the applied reading class uses diagnostic/prescriptive techniques and group instruction to improve students' reading comprehension, reading rate, work analysis, spelling, and study skills. The English course enhances the confidence of enrollees in grammar and composition by providing practice in writing paragraphs and short essays. Applied mathematics helps students make the transition from arithmetic to algebra by emphasizing an integrated and practical approach to using math to solve real-world problems. Applied physics uses a "hands-on" method to examine mechanical, electrical, fluid, and thermal systems.

Students progress through the classes as teams to benefit from peer support, and teachers work together closely to track and encourage student progress. Students learn not only to master the subject matter, but also those skills needed to be competitive in the workforce.

Of the more than 180 students enrolled in the program since Fall of 1993, two-thirds have completed all their college preparatory courses. Ninety-eight are now enrolled and succeeding in the Spring 1996 semester. There are many success stories, typified by students such as David Bathalon who entered the program in 1993 requiring remediation in math and English. He will graduate in May with an A.S. degree in Electronic Engineering and is employed by the St. Lucie County School Board in information management. The effectiveness of the Bridge Program is demonstrated by students who stay in school, are directed toward a career goal, ready for success in an Associate in Science degree program, and preparing for productive employment.

The College Reach-Out Program ("CROP")
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The College Reach-Out Program ("CROP") at Central Florida Community College ("CFCC") is an excellent example of the positive influence and impact a community college should have in the educational development of area students. The purpose of CROP is to identify and recruit low-income and educationally-disadvantaged minority students in grades 6 through 12 in the three middle schools and the three high schools located within the target area. Special emphasis is directed toward recruitment of middle school students, because we recognize that early intervention is important. Program efforts endeavor to (1) educate parents about how to keep their children focused on education, and (2) increase student interest in school thereby motivating students to pursue higher education via a community college or four-year college or university.

One of the major components of CROP is Project Future. Project Future is an intensive six-week summer program designed to develop and enhance academic skills, improve communication techniques, foster leadership skills, and prepare students for college entrance exams. The summer curriculum consists of classes in English, Mathematics, Reading, Academic and Career Counseling, Life Skills, and Computer Literacy.

The Computer Literacy component introduces students to basic computer operations. Students attend ninety-minute sessions four days per week. Goals and objectives are designed to provide student participants with exposure to keyboard literacy and a variety of other essential elements associated with this technical field, including:

- a lecture about the history of computers--where they came from and where they're going;
- a "hands-on" look at computer components (i.e. monitor, keyboard, mouse, CPU);
- discussion of the basic operations system;
- an introduction to basic keyboarding;
- use of a typing tutorial program;
- an introduction to Windows; and
- an introduction to word processing software.

To date, 118 students have participated in and successfully completed the Computer Literacy Summer Program ("CLSP"). Follow-up studies of these students reveal the following successes for the Fall term of the 1995/96 school year:

1. Eighty percent of all students enrolled in the CLSP assimilate well upon their return to their respective schools.
2. Of the 118 students enrolled in CLSP, the overall grade point average improved from approximately 2.0 to almost 2.8 for the Fall term of 1995.
3. The eighth grade students showed the most improvement, with grade point averages approaching 3.0 for the Fall 1995 term.
4. Noting that the criteria for admission to the program is a GPA below 2.5, twelve students are now well above a 3.0 and up to a 3.75 GPA.
5. From conversations with teachers and counselors, students enrolled in the CLSP demonstrate markedly increased confidence and self-esteem associated with their academic activities.

Forty-five CLSP completers participated in the two ACT/SAT preparatory courses. Although scores have not been received, we are confident that these students performed admirably. Of the 118 students enrolled in the CLSP, we anticipate approximately 75 pursuing postsecondary education.

As the result of an emphasis on technology, interest in the program both in the community and from within the school has increased dramatically. We have received over 200 applications for admission to this summer's CLSP.

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To foster the writing process across the curriculum, the Boyce Campus English Department faculty has designed a combination computer laboratory/classroom facility which provides optimum flexibility for use by entire writing classes, by designated students from specific writing classes, and by students from the campus community as a whole. This facility, known as the WritingPlace, is a large computer/writing area into which two classrooms are inset. It provides software for composition and testing as well as tutorials in grammar, mechanics, and typing. In addition, professional advice is available for both completed papers and papers in progress. The WritingPlace thus provides help for both transfer and occupational students as well as for under-prepared students. It has created a teaching/learning community which has opened doors of communication between students, between students and faculty, and between faculty.

Composition on computers, formerly provided only sporadically and in "borrowed" classrooms, results in better papers because students revise and edit willingly when computers simplify such tasks. Once the fear of computer technology is overcome, the fear of composition seems to dissipate. The ease of production and revision encourages students to add important supportive detail to their papers. With the

use of spellcheck, students can eliminate their most frequent errors--misspelling. Thus, their work has increased in length and accuracy. Furthermore, they take great pride in the appearance of papers produced on laser printers.

In the near future, the WritingPlace will add Pentium 133 computers with CD-ROM, so students can access the on-line Readers Guide and library holdings while working on papers requiring research. The use of an LCD presentation panel with portable CD-ROM computers will permit faculty to actively demonstrate revision techniques and to teach students to interpret the relevancy of an article based on its title and abstract.

Two classrooms used for developmental writing courses are inset into the WritingPlace. Students in those courses have contact with the WritingPlace from their first English class. These students are those most at risk for attrition. It is hoped that WritingPlace support will help both their language skills and their retention. We expect students will return to the WritingPlace in subsequent semesters to produce their papers.

The WritingPlace has two types of computer stations: hexagonal pods for twenty-four computers and rectangular tables for other computers. The space is basically triangular, with the pods being located at the apex of the triangle, the computer tables around the edge of the facility, and the classrooms inset at the base. The hexagonal tables permit an attractive concentration of computers in limited space. They facilitate peer conferencing and faculty involvement with individual students yet provide the impression of privacy for students wishing to work alone.

Each classroom opens directly into the WritingPlace. Near the hallway entrance are work stations for a professional English teacher and for the technician supporting the computers. The overall arrangement makes the facility as readily available to "walk-in" students as to students from the adjoining classrooms.

Because many students approach the writing task with great trepidation and because some are still fearful of technology, care was taken in the placement of doorways, work stations, and computer stations to break down barriers and make students feel welcome in the facility. The unique configuration, appealing colors, and comfortable seating encourage students to seek out the WritingPlace as a pleasant place to work.

Student reaction has been positive. Attendance in the developmental courses is high. Weekly, increasing numbers of students come to produce their papers, to get advice from faculty, and to seek peer input. Faculty from various disciplines are sending students to work on resumes and papers. The adjoining classrooms encourage maximum use of the computers, making the computers more cost effective. Faculty teaching composition on the computer utilize a percentage of class time in activities which do not involve the computer; those activities take place in the classroom, leaving the computers free for use by another class.

The WritingPlace could easily be replicated elsewhere. Adopting campuses would have to look creatively at existing space to create appealing irregular space if possible. Minimal remodeling would consist of the installation of doorways between classrooms and the computer lab. Existing computer desks could be used; however, the appeal of hexagonal tables is so great that campuses would probably want to purchase them.

The WritingPlace has positively impacted the teaching within the English Department. Prior to its opening, only two of the ten full-time faculty taught composition in computer classrooms and then only occasionally; four used computers for grammar drills. Faculty previously using facilities designed for computer programming or word processing found that parallel rows of computers inhibited peer review and other important composition skills. Because the WritingPlace provides both flexibility and technical support, eight of the ten faculty now regularly involve students in composition on computers.

Faculty teaching in the adjoining classrooms cooperate in scheduling their classes into the facility. This has encouraged faculty to interact and to share ideas, particularly when several faculty members have students working in the lab simultaneously. Sharing space has had the anticipated advantage of introducing students to additional faculty members during the semester, increasing their familiarity with faculty and decreasing student apprehension by helping students determine which faculty they wish to take for future courses. Students feel more comfortable about seeking help not only from those faculty they know, but from others whom they have seen in the WritingPlace. The attractiveness of the area has encouraged creative suggestions on its effective use. Computer Services has scheduled it for a staff development workshop, and it will be the site of a series of workshops on e-mail and WordPerfect, to be presented to interested faculty by a faculty secretary on her own time.

Correctional Education
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Vocational and Baccalaureate programs are offered by Lincoln Land Community College in the Taylorville and Graham Correctional Centers. Students enrolled in these programs are typically under-prepared vocationally, economically, educationally and socially. Most inmates are from inner city, low-income neighborhoods and from broken homes. They were considered failures by their parents and in the public school system because they could not adapt socially or could not learn through traditional means. As abused or neglected youngsters, many adopted poor role models. All have ended up in the criminal justice system.

Under a contract with the Illinois Department of Corrections each facility provides several vocational programs appropriate to the population of each institution. Taylorville Correctional Center, with a population of 1175 inmates, is the site for five vocational programs including Construction Occupations, Computer Technology, Commercial Cooking, Business Management and employability/personal-management skills. Seven programs are made available to 1500 inmates at Graham Correctional Center. They include automotive mechanics, construction occupations, electrical maintenance and repair, heating and air conditioning, computer technology, small engine repair and employability/personal-management skills.

Students attend six hours per day, five days each week on a year-round basis. The format of each vocational program matches that of entry-level job training in the applicable industry, to the fullest extent possible. Inmate/students are treated as students rather than inmates and learn as much about working with others as they do about subject matter.

Traditional learning models, in many instances, have failed these students. However, instruction based on hands-on experiences and the exploration of theory relative to those experiences have proven more successful. Vocational studies are guided using instructor-prepared materials, lecture, demonstrations, videos, software, group discussions and individualized instruction. Programs are open-entry/open-exit with a class size averaging 15-17. Although programs are self-paced and competency-based, students are expected to earn one credit hour per week. One-on-one instruction and tutoring are available for students who fall behind. Due to the financial limitations of the contract, college staff must be resourceful and creative in preparing or appropriating learning materials. TV/VCRs are available in all classroom/shops, and computers have been procured from the State surplus warehouse when available. Up-to-date program-appropriate shareware is used whenever possible. Standard software upgrades are purchased as they become available.

In addition, several sections of general education courses such as math, language skills, government, science and humanities, are offered to support the vocational programs or for completion of an associate degree. These are taught on an eight-week module basis, most frequently by adjunct faculty.

Success for the inmate/students can be measured in many ways. The most obvious is by grades. Over 12 percent of incarcerated students meet the 3.5 GPA required for the Deans' List. Since the primary purpose of correctional education programs is to provide inmates with skills which will serve them upon their release from prison, then the recidivism rate must be used as a criteria for success. A recent study at the two correctional sites revealed that 12 percent of inmates who completed programs during FY '93 and were released by January 1995 have recidivated compared to 40 percent plus from the general inmate population.

An important measure of success for the student is the recognition from his family and loved ones he receives when he graduates from a vocational program or completes a degree. Each correctional facility opens its doors annually to allow inmates' guests to attend a commencement ceremony which is structured as closely as possible to that on campus. The college president and administrators attend to voice recognition of each inmate/student's accomplishments. The facility provides lunch and inmates are able to share a special visit with their guests.

It is often long after the grades, the completion of a program, and commencement, that an inmate is released from prison and he realizes just how special his educational experience really was. Occasionally a former inmate/student will call his instructor to say "thanks" and "here's what I'm doing now." One inmate who did so reported that he was paroled to another state. He had been incarcerated six years on a class X felony and would have been considered a "loser" by public standards. With training in electricity and electronics, he was able to obtain contracts with several nationally known companies doing warranty maintenance and repair. He opened his own business and has been free for nearly four years now. He earns over $40,000.00 from his business, owns his own home, pays taxes, and grocery shops

like everyone else. This week our welding instructor received a call from a former inmate/student who was released five months ago. The former student reported that he is employed as a certified welder at a fabrication plant. In three months on the job, he has become recognized as their "expert" with stainless steel. He is also respected by his co-workers and appreciated by his employer.

While other colleges within Illinois have adopted the same format for their correctional center programs, it lends itself to adaptation by on-campus and technical centers as well. Instructors who function well under the open-entry/open-exit arrangement are special people. They work longer hours than most college instructors, have more individualized contact with students and experience more closely the process of learning with their students. (One instructor indicated that we teach for the "ah-hals"; and, that moment of insight is rewarding for student and teacher alike.) Many students remain unsure of their own abilities to realize success. Efforts to overcome this skepticism are incorporated into all course offerings through encouragement and reinforcement during the student's progress. Vocational programs are bolstered by the incorporation of employability skills in an attempt to further assure the student's success in finding a job upon his release back into society.

Although we cannot help an inmate with his economic situation, correctional programs can help an inmate develop the vocational, social/workplace and educational skills to help himself. Instructors often become new role models. They are role models who are not just knowledgeable in their field but are decent human beings who care about their trade and use any technology available to turn out capable workers.

Crossing Over the Bridge: Computer "Basic" Literacy
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The developmental computer program, Learning Computer Basics, draws on a potpourri of diversity represented by the community: grandmothers, business owners, architects, immigrants, realtors, college students, homemakers, bank board of trustees members, teachers, GED/ABE students, postal workers, disabled, engineers, factory workers, construction workers, and one who graduated magna cum laude from a local university.

This course was designed to prepare students for the computer lab of CIS100, our introductory college-level, transferable course. CIS100 is a fast-paced survey course covering all aspects of computer science. Three classroom hours are devoted to lectures about computer terms and concepts. One hour a week is spent in the lab. Class size is limited to 35. Students are expected to keep up with the reading as well as the experiential lab projects.

We learned that students at the developmental level need to work with computers, but are not up to the reading and pacing challenges of a traditional class. Our

objectives were broadened to teach students to be comfortable with computers so that they could continue training at work or college.

Features of this course

- Technical terms and concepts are introduced and thoroughly discussed at the beginner level.
- Class size is limited to five, allowing good rapport to develop between student and instructor.
- Instructor involvement is important. When a student misses an appointment, the instructor calls. If there are concerns, they are discussed at that time.
- Topic lessons introduce one or two concepts each week, instead of ten in the CIS100 lab.
- Our flexible learning format allows students to work independently for two hours (or more) each week as they read lessons, complete exercises at the computer, and take mastery tests.
- Students work at their own pace. They are encouraged to complete at least one topic per week and may complete more if ready to do so.
- Students may attend another session during the week as a review.
- Grades are used as pass, fail, or withdraw. Incomplete grades are not considered.
- A student handbook was designed for this course. It includes lesson topics, computer exercises, and self-check quizzes. The exercises include step-by-step instructions.

Benefits to students

- Students learn basic computer literacy concepts and terms.
- Students start with the basics at the computer using the keyboard and menu options at first. They graduate to shortcuts and finally use the mouse, allowing them to become familiar with a variety of situations.
- Students learn to look for clues on and off the screen to help themselves out of difficulties.
- Because each "class" is kept small, students are willing to share experiences with others, reinforcing the lessons.
- Students build self-esteem with each success.
- Students become eager to continue with computer and other college courses.
- The flexible format allows students who have job interviews, business trips, illness, etc. to meet with another group so they stay current with topic material.

Benefits to the College

- This course introduces most of the students to the College of DuPage.
- Success in this course opens the door to other computer and general courses at the college.

- Students are welcome to work at College of DuPage satellite learning center computers located strategically in DuPage County. This introduces them to course offerings at the centers.

MEASURES OF SUCCESS

Student Tests

Topics include self-check quizzes. Students check answer keys in the handbook, then take a mastery test. A grade of 80 percent or higher is recorded. If 70 percent or lower, the instructor informs the student. Together they review the material before the student retests.

Student Evaluations

At the end of each quarter, students state whether the course met their expectations. They may comment on any aspect of the course: what was the most valuable, what could be improved, recommend course to others, whether tests reflect content of the course.

Students also evaluate their instructor. Questions as to whether the instructor put students at ease at the computer, clearly defined the course objectives, prepared for class, or stimulated thinking about subject matter are included. They are asked if they would recommend the instructor.

Continued Enrollment Of Students

Students are asked whether they plan to continue with the next part of the course. If not, the answers are varied: other computer courses, personal business, plan to return later, enrolled in other college courses.

Course/Future Evaluation

The College of DuPage tracks the students to mark patterns of success. Specifically, re-enrollment in CIS courses and progression on to other college levels are monitored. Additionally, at the end of each quarter a student questionnaire is collected to ascertain student future plans.

This program could easily be adopted by other colleges. We selected MicroSoft Works 3.0 for DOS. The student handbook is being published by the College of DuPage and will be available through our bookstore.

Developmental Language Lab
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On October 7, 1980, the Illinois Board of Higher Education authorized St. Augustine College to operate in the State of Illinois. The College opened its doors to students for the Spring semester of 1981. About 240 part-time students were enrolled and studied English. Today, the institution is serving over 1700 full-time students in its collegiate, occupational and college preparatory programs.

St. Augustine College was created to make higher education accessible to minority students, particularly those of Hispanic descent. Over 95 percent of our students are Hispanic and about 70 percent are mothers. We offer support services such as: child care, tutoring, counseling, etc., to ensure the success of this at-risk population. Technology is used to enhance teaching programs and, therefore, increase student learning and retention.

In the Fall of 1994, the College established a three-station multimedia language lab at its main campus using the ELLIS Language Senior Mastery Program (TM). It was chosen after researching several Developmental English multi-media products. The mini-lab was used for English 101-104 and the EXITO program. The mini-lab enabled students at the College to strengthen their English skills. The College recognized that English skills were critically linked to academic success and that technology could facilitate this link.

We chose ELLIS because it combines contemporary Computer Assisted Instruction with established instructional theories to produce an innovative Developmental English program. The program increases communicative competency by teaching vocabulary, reading, writing, grammar, cultural expressions, pronunciation and listening comprehension. It allows learners to take an active part in developing their own learning strategies and provides instruction for a variety of individual learning styles. For example, we found that some of our students may benefit from a more visual approach to learning, while others may be more cognitively oriented. ELLIS employs several types of instructional methods: tutorial, simulation, drill, and practice gaming.

Along with these features, and perhaps, most importantly to St. Augustine, is the program's bilingual support component. It provides explanation and instruction in either Spanish or English. Because our students' predominant language is Spanish, this enhanced our students' learning and facilitated the teaching of English. Two students who had never used a computer nor a mouse overcame their computer fear during one ELLIS demonstration. Our long term goal is to have a 15 station laboratory at the main campus and satellites.

As a result of our efforts to improve the program's effectiveness, we recognized that the instructors must participate in the program implementation; it must be integrated into the course objectives, syllabus, exams, and classroom activities; the

equipment's use must be supported through additional resources, such as a work study, when classes consist of nine or more students.

During the Spring semester of 1995, the program was expanded to include additional classes. Each class focused on different modules. Students used the ELLIS program for one hour a week in 12 out of 16 weeks. We hired a College work study student for 20 hours a week to provide assistance.

In addition, to an overall improvement in student test scores (pretests compared to post tests), the benefits of the program included the following:

- students learned basic computer skills and achieved increased self-confidence;
- students improved communication skills through role-playing;
- the grammar component reinforced class materials;
- the program supported students whose learning style is supported by interactive programs;
- the program's ease of use promoted learning and group work;
- the program enhanced the methods utilized by the instructors to encourage practice in speaking and listening skills.

St. Augustine has improved its use of the ELLIS program technology by implementing a more systematic approach that increases the quality of the program. Today, each English class receives an initial presentation twice. The ELLIS components are integrated into the course syllabi, mid-terms and final exams. Work sheets have been developed that aid students in the exploration and study of modules. We have trained personnel who provide additional support to both students and instructors, and continue to work on methods that improve the use of this valuable tool.

Drama and the Humanities
Miami-Dade Community College
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From the earliest of times, man has expressed his struggles with ethical conflicts in drama. If we are truly to understand the issue of ethical conflict, this term must be defined and illustrated as it informs the drama of the ages. An overview of such disharmony will help the student involved in the literary arts and humanities to better understand ethical conflicts concerning work, the nature of the good life, happiness, and love.

Following a pedagogical approach which recognizes the different learning styles of college students, this project utilizes multimedia technology (text, audio, full motion video and computer graphics) to survey ethical issues from the perspective of drama. On the computer screen, this module ties thematically the ethical concepts

of the nature of the good life, happiness and love framed by social and historical events and manifested in the art of dramatic literature of the Western World.

The program takes a holistic view of the arts and emphasizes the importance of drama as a reflection of human ethical views. The topics help the student to distinguish between the viewpoints of well known dramatists, discern the relationships and issue to be confronted in dramatic literature and the humanities, and recognize that the art of being human involves applying the skills of critical thinking to all appropriate activities in life.

A series of interactive screens lets the students choose between different historical periods of the theater such as Greek, Roman, English, French and American. Every section contains a historical synopsis which is then illustrated with a video clip.

The students have also the chance to explore in depth the works of a contemporary playwright such as Sophocles, Seneca, Shakespeare and Moliere.

A significant advantage of computer multimedia is the medium's ability to explore virtual environments. In this program, a three-dimensional recreation of Shakspeare's Globe Theater allows the students to become spectators and actors inside the virtual building as if they were walking through it.

Emerging Voices in the Global Forum
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Because students learn communication skills primarily through interaction with their peers, it is challenging to foster academic literacy in a relatively homogenious and largely under-prepared student body. In spite of the varied approaches we used in English instruction since our urban community college opened in 1974, our students consistently ranked near the bottom in the Regents' Testing Program, a measure of reading and writing proficiency required for graduation from state colleges in Georgia.

Then, heeding warnings that African-Americans risk being bypassed by technological change, we decided to provide our students with an on-ramp to the emerging Information Highway. We hoped they would sharpen their skills in order to make their voices heard in a global forum that cuts across racial and class barriers.

Under the leadership of an education-oriented governor and a visionary University System chancellor, funds from our state lottery are being directed to instructional technology. To capitalize on these newly available resources, we revised our English composition program in three phases, piloting each one and sharing the results in faculty development workshops:

First, we created a mandatory lab component in which computer-savvy tutors began introducing students individually to an array of communications resources.

Then we scheduled our writing classes in a Macintosh computer lab, where word processing became the primary vehicle for instruction, and we expanded our lab so students could complete and revise their work.

As our campus computer network was brought on line, we linked our classroom and lab workstations to the Internet so that our students could explore Web sites, lurk in Usenet groups, and finally join in the electronic discussions and debates.

Resources provided through Georgia's PeachNet network--particularly the Galileo library system, which makes full-text articles available on the Web--readily enhance our communications program. But resource distribution is still uneven, so our students have to share e-mail accounts, and we must rely on a public access provider for a full (albeit slow) news feed.

Anecdotal evidence assures us that our students are joining vigorously in the global discussion. In class and lab, they exchange correspondence with penpals they have encountered on the Web and in Usenet dialogues. And their voices are being heard, sometimes meeting with a critical scrutiny their teachers and classmates would be reluctant to provide face-to-face.

Our positive impressions are confirmed by rising Regents' Test scores. For almost twenty years, barely a quarter of our students passed the test on their first attempt. Now over half of them do. Primed by electronic encounters, they are now better prepared to interact with the wider peer group their graduation will allow them to enter.

English As A Second Language
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The English As A Second Language program at Catonsville Community College is comprised of beginning through advanced, integrated skills courses which include listening, speaking, reading, writing, grammar, and vocabulary. To better serve the ESL students, the program offered at CCC's Owing Mills Center has recently added an innovative 25 station CD-ROM lab in order to provide students with individualized, sustained skills practice and creative language opportunities. Students, at individual computers, work at their own pace while monitoring their progress. The lab environment motivates students to control their own learning and allows instructors opportunities to consult one-on-one with students on the linguistic and thematic content of the software.

Each ESL class works in the lab with the instructor. The eager students spend their lab time engaged with CD-ROM language software which supports classroom instruction. The lab environment also stimulates student-peer interaction and coaching as students are engaged as tutors and trainers for each other.

Due to the popularity of the lab, additional lab classes have been created in which students and instructors develop language learning goals and a multi-media instructional plan. Students clamor to participate in these successful lab sessions which incorporate new, state-of-the-art features. Using electronic mail accounts, students participate in international ESL discussions at SchMOOze University and use Netscape and Firefox, to explore the Internet and visit places such as the White House, universities around the country, or the Smithsonian Museums. Students also become detectives in a language-based mystery game and create their own sound and story files for other students to listen to and read.

Another creative feature of the ESL program which also uses the computer lab, is the pairing of popular academic programs with ESL courses. Computer Information Systems, Computer Aided Design (CAD), Automotive Technology, and Early Childhood Education programs are offered with customized ESL courses. While learning appropriate professional vocabulary and other English skills, the international students obtain marketable job and employment skills.

The versatile ESL program can serve as a model for other community colleges and universities. CCC has collaborated with local Maryland community colleges in need of advancing their ESL instructional skills, curriculum, and understanding of computer assisted language learning. The ESL faculty have presented the program at state and national conferences, consulted on a regular basis with other two and four year colleges, and hosted international visitors to the lab. The CCC Owings Mills Center has been designated as a beta site which tests and demonstrates the *English Discoveries* and *Rosetta Stone* ESL software.

In 1991, Catonsville Community College became a partner with the Jewish Vocational Service in Maryland to provide English As A Second Language skills to international students. Thirty-five students, predominantly Russian immigrants, enrolled in the program at the CCC Owings Mills Center. The Center, an extension facility of the college, is located in a growth area of Baltimore County where many Russian immigrants reside. Due to the proximity of the Center to the ESL students, the ESL program has experienced great success.

In 1995, the enrollments soared to 425 ESL students. While the program excelled in the quality of its teachers and the curriculum delivered, it lacked "hands-on" instruction to supplement classroom instruction. A computer lab would allow for the interactive environment that was missing from the program.

Creative collaboration between the Developmental Education Department and the Continuing Education Division allowed for the purchase and installation of a 25 station, PC lab. Student evaluations of their lab time have been overwhelmingly positive. Students' ability to measure personal success enables them to control and monitor their own learning, an essential feature of successful and sustained adult learning.

The primary ESL software is *English Discoveries* which runs from local CD drives but uses a networked management system on the lab's server. Using this dynamic

software students practice applied grammar; improve oral-aural skills using headphones with microphones while watching compressed video and listening to dialogues, radios, and answering machines; learn vocabulary and read related stories; and try to solve language-based mysteries. The software offers instructors the opportunity to use pre-created lessons or develop their own lessons while tracking individual student progress. Students receive immediate feedback on their work and can check their records to chart progress. While students are working individually, instructors hold conferences with individuals and small groups. The program includes 12 CD's which start with basic English, beginning with the alphabet and numbers, and continue through to very advanced levels which have also been used in the Developmental Reading Program. The software includes native language support which provides translations, explanations, and a bilingual dictionary. Other language software available to students includes the *Rosetta Stone* which is both an ESL and foreign language program providing additional applied grammar and vocabulary practice for beginning and intermediate level students. Student placement in the ESL program is also done on the computers using a computer adaptive language test, the CALICOMPUTEST, which measures vocabulary, grammar, and comprehension skills. A writing sample is also used in the assessment process.

Gospel Interface: Tracing the African American Experience as Reflected in Today's Music
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Miami-Dade Community College has a multicultural student population of diverse ethnic and cultural backgrounds. One of the common elements that our students share and enjoy is listening to music; however, music appreciation is taught in the classroom from the perspective of European culture. Although students listen to music, they lack the ability and knowledge to critically listen and understand music of their own time. They do not understand the subtle linkages to the historical and social origin of their music, and its relationship to other styles, such as the blues, pop, rock, jazz, and folk.

Gospel music has been a dominant motif both socially and musically in many cultures, especially the African American culture.

Due to its strong character, influence and impact, gospel music is evident in a variety of musical styles and religious, social and political expressions. Blues, pop, rock, jazz, and folk music from 1950 to the present owe their beginnings to gospel music and the contributions of early composers of African American music. One of the goals of the humanities distribution courses is to further impart knowledge and enhance the understanding of human interaction through the holistic process, including critical thinking and critical listening. We should then augment student perceptions of musical concepts and the awareness of the historical, social and

political contributions to music by equipping students with the tools to better understand music composed and performed in today's society.

This multimedia project utilizes new interdisciplinary instructional strategies with an emphasis on the historical, social, and political experiences of modern music (1950 to the present) exploring the gospel music as the central theme.

The approach taken includes:

1. The development of a multi-media interactive module.
2. Integration of electronic music technology, Music Instrumental Digital Interface (MIDI) and original music compositions, to illustrate the impact of this style on modern music.

The primary objective of this program is an experimental module focusing on the contributions of African Americans to the musical canon, especially gospel music. The module enhances student appreciation of the importance of non-European music. The students increase their understanding of current musical styles as well as the music belonging to earlier periods.

The integration of multimedia (text, audio, and full motion video) in the teaching of music appreciation, allows the instructor to identify musical concepts and elements of music, and supplement the lecture format.

An Innovative Instructional Technology Model Program in Adult Education

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The Innovative Tech Design (ITD) Center of Excellence at Waubonsee Community College was established in 1993 to promote the use of technology in adult education. Students from all areas of adult education including Basic Skills, GED Prep, English as a Second Language, Workplace, Literacy, Family Literacy and JTPA, are served by the ITD Center. The Center functions as an educational technology resource for Illinois programs, and, through national conference presentations and the Internet, has also offered assistance to programs throughout the United States and many other countries. More than 1400 student sign-ins per month indicate a strong endorsement on the part of students and faculty of the Center program. The ITD Center is open 36 hours per week to assist students on a walk-in basis, and offers special programs to enhance the educational opportunities for all of the Waubonsee Community College adult education students.

Central to the philosophy of the ITD Center is the 'humanware' concept. A manager coordinates the program and directs the grant projects. Two classroom instructors are available during all hours of Center operation, and they assist students with one on one instruction and assignment of software programs. Peer Consultants and Literacy Volunteers (LVA) are also available to assist students.. Five part-time

Specialists, master teachers from the Waubonsee Community College adult education program, work as a liaison between technology and instructors. Humanizing technology is the key to the ITD Center's success.

ITD Specialists assure that the Center software is integrated and cross-referenced into the classroom curriculum, train instructors and volunteers, write software instructions, develop computer aided instruction (CAI) curricula, explore the limits of technology, and find methods of incorporating the best technologies available to the adult education curricula. Some of the projects developed by Specialists include:

- A Peer Consultant student volunteer program, which has trained over 200 students to assist their peers after completion of a 12-hour training course. In addition, a Peer Consultant Newsletter is produced by students semi-annually.
- The Family Tech program, held the third Saturday of each month, which brings students and their children together with technology, utilizing special software and activities that promote the concept of family literacy. More than 75 parents and children attend each month.
- A semi-annual training program, Techno Boot Camp, to train Center instructors on the use of new hardware and software.
- Individualized educational plans (IEP's) for each area of the curriculum, by course or reading levels and cross-correlated to classroom curricula, to assist Center instructors with placement into appropriate software programs.
- Development of computerized placement tests into ITD Center for students who are not currently enrolled in Waubonsee Community College adult education programs, or are waiting for standardized testing.
- A series of Quick Notes, written by Center Specialists, that reduces all of the manuals of over 218 software titles to a single page of instructions per program. These notes assist students or instructors to start, move through, and quit each software program, and include a mini review of the program on the back of the page.
- Beta testing of commercial software to help assure that quality, educationally sound software programs are produced.
- Development of the Internet, distance learning, telecommunications and other teaching strategies as additional tools for adult education students.
- Research into the use of technology to assist learning disabilities and physical disabilities and differences in student learning styles.
- Creation of student or curriculum specific custom software programs, using hypermedia software such as Digital Chisel, ToolBook, and HyperStudio.
- Special programs in the Center for off-site classes, family literacy classes, workplace, public assistance and other programs to give them an opportunity to use the ITD facility. In addition, laptop computers and other portable technology is made available to off-site programs and instructors.
- Assist other colleges and community-based organizations via phone, on-line and Internet forums and a computerized bulletin board system

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I am addressing these situations by developing interactive, computer modules that recreate solutions of the more important problems and concepts we cover in class. I use Authorware to develop these modules. Each problem unfolds a line, or even a character, at a time when the student steps through the computer module. I include graphics when they are appropriate to illustrate a point. I even include animation if I think it will enhance their understanding of the concept. When the students step through a module, they can jump from the beginning frame to the final frame to see the solution, go step-by-step through the development, and if need be, they can go backwards to revisit a troublesome area.

In the past, students had only their notes and their recollections of my lecture to assist them in studying the material. With the computer modules, they have a dynamic re-creation of my lecture they can fast-forward, go a frame-at-a-time, or go back and forth until they understand the concept. These modules are available in the computer center, and students are encouraged to download them so they can take them home and use them when they need them.

Now each student can visit and revisit my lecture when he/she is ready. They can see the lecture whenever they are ready to do their homework, and lastly, I've annotated the solutions, so they see an example of how they should be taking class notes.

NEWSKILLS
Volunteer State Community College
Nashville Pike
Gallatin, TN 37066
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Contact Person: Jim Hiett

Since 1986 Tennessee's Board of Regents Colleges and Universities have been administering the Academic Assessment and Placement Program locator test (AAPP) to entering students; this assessment helps determine students' readiness for college work and places students in college-level or remedial/developmental courses in math, reading, and writing. Although Tennessee's Developmental program has been very successful, educators recognized that many at-risk students, especially in the non-traditional categories, did not have the time or the financial resources to devote to as much as two years of Remedial/Developmental coursework.

At Volunteer State Community College in 1993, Dr. Charles Lea, the Vice President of Academic Affairs, and Mr. Jim Hiett, the Associate Dean of Developmental Studies, conceived of a program to increase the retention and success rate of at-risk students in the traditional and non-traditional categories. In addition to having basic

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At Volunteer State Community College in 1993, Dr. Charles Lea, the Vice President of Academic Affairs, and Mr. Jim Hiett, the Associate Dean of Developmental Studies, conceived of a program to increase the retention and success rate of at-risk students in the traditional and non-traditional categories. In addition to having basic

skill deficiencies, many of these students are hindered in their quest for academic success by fear of classroom competition, lack of familiarity with college systems, and the prospect of up to two years of remedial/developmental coursework.

To help these students achieve success in a timely manner, the NEWSKILLS Center provides at-risk students with a unique TABE-PC assessment of their current skill levels, computerized individual learning modules supplemented by one-on-one instruction, personal and career counseling, general information about the services of the college, academic advising, and open entry--open exit enrollment.

During orientation and registration, students are referred to the NEWSKILLS Center by the college's Counseling and Testing personnel, Admissions Office, and by Academic Advisors. Students may use the NEWSKILLS Center to refresh their skills before taking the AAPP retest. These options help insure more accurate placement. Many non-traditional students may, for example, have completed two years of high school Algebra several years before. If they took the AAPP without any review, they might test into the lowest level of remedial math. Although NEWSKILLS work is non-credit, a brief review (from 2-6 weeks) in the Center may lead to the elimination of one, possibly two, or many times all three of the required remedial courses. Some students are unsuccessful in two attempts in Remedial/Developmental courses; the NEWSKILLS Center affords these students with an alternative third chance.

NEWSKILLS personnel include two math instructors, one math lab assistant, one reading instructor, one secretary, and a coordinator. The coordinator and the secretary are the full-time personnel on duty in the Center 64.5 hours per week. With help from people who are the "soul" of the program -- the counselors and the instructors, and who provide a nurturing, empathic, and non-judgmental environment, the students build confidence in their skills and abilities to do college level work.

NEWSKILLS instructional software is supplied by Integrated Learning System and is available from the server to all students working in the Center. The Integrated Learning System's networked approach allows each student to work on a number of different skills at a pace they are comfortable with. After the assessment, students know specifically which areas in reading, writing, and math that they need to focus on. NEWSKILLS Instructors monitor student progress by using the computerized management system which identifies time on task, student success or difficulty with a particular module, and pre-test and post-test scores.

Since the Fall of 1993, the NEWSKILLS Center has served over 800 students. In the last three semesters of 1995, 147 were enrolled in Basic Math, and during the AAPP testing periods, 66 of those students were prepared to be tested. Of those 66 students tested, 63 tested out of Basic Math (95%). In Elementary Algebra, 116 students were enrolled and 54 were ready to test. Of the 54 students tested, 45 tested out of Elementary Algebra (83%). In Intermediate Algebra, 32 students enrolled, and 16 were ready to test. Of the 16 tested, 15 tested out (94%). Reading enrolled 47 students, 27 tested, and 25 tested out (93%). Writing enrolled 82 students, and 47 were prepared to test. Forty-four (44) tested out (94%).

Personalized System of Instruction/Computer Managed Learning

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In January, 1995, the Metropolitan Campus of Cuyahoga Community College opened a center for Computer Managed Learning (CML). This facility, which employs thirty-four Pentium-based computers, provides an environment for self-paced instruction by students. The CML Lab currently serves approximately six hundred students per quarter. The CML Lab, which employs the Personalized System of Instruction as its pedagogical foundation, offers a creative approach to instruction for under-prepared students, utilizing computers for self-assessment and self-instruction.

By intuition, imagination and observation, educators are increasingly aware that learning is generally more efficient and effective when the learner, rather than the teacher, sets the pace. Responding to the changing pedagogical needs of students, the Social and Behavioral Sciences Department of Cuyahoga Community College's Metropolitan Campus began incorporating the Personalized System of Instruction (PSI) into several courses in both Psychology and Social Science in the early Eighties. These PSI courses were developed by faculty employing the Keller Plan.

At Cuyahoga Community College, we have observed well-motivated, goal-oriented students who complete all their course requirements in the fifth or sixth week of an eleven-week quarter.

The facet of PSI that probably speaks the most to the under-prepared student is that failure is never considered. The course is divided into units, usually determined by the number of chapters in a given textbook. After reading each unit, the student must pass a test in order to move on to the next unit. However, if the student does not pass the test, this is not considered a failure. The student is urged to study more and retake the test until he/she masters the material.

Another desirable feature of PSI is the time that is made available to students for studying and testing. There are no scheduled class times, and there are no lectures. The testing and study areas are open and available to students six days a week for a total of forty-eight hours. The student is responsible for studying the text and being prepared to pass each unit and a final exam. Tutors are available during the hours that the testing area is open. Since our typical students usually hold one or more jobs to support themselves, the flexible hours made available by the PSI system help to create a very supportive environment.

As the technology became available, the computer replaced the original paper/pencil testing. In 1988 we adapted PSI to Computer Managed Learning (CML). This has created even more advantages for students, not to mention the time efficiency for faculty and staff. The student, of course, receives an immediate response regarding test scores. After receiving the scores, he/she may re-test after studying the material again. All of the grading, formerly done by faculty and staff, is now completed by the computer. Grades are stored in the computer for future reference and final grades. During the eight years that the CML Lab of CCC's

Metropolitan Campus has been in existence, it has proved to be a valuable learning center for our diverse student population. Over fifty per cent of our student body has been out of school for several years, and many of those never completed high school. The CML Lab aids these students in recovering and/or developing the skills necessary to further their educational efforts at CCC.

The under-prepared students can learn more than the particular discipline being studied in the PSI/CML environment. There are a wide range of tutorials available to facilitate the acquisition of good study habits. Students acquire an attitude of independence as they realize that they do not always have to depend on an instructor to learn new material. As they set their goals they learn more about how to pace themselves to achieve those goals. Those students who are not computer literate have an opportunity to learn computer skills by using an extremely user-friendly system. They learn the value of team work as they are urged to pair up with other students to study and discuss the material. They are offered the opportunity to earn extra credit, over and above their exams, by keeping journals about their experiences, or writing about related extracurricular materials they have read. This affords them the opportunity to use and enhance their writing skills.

The psychology and mathematics departments have been the primary users of the CML Lab. More recently, faculty members in social science, sociology, and political science have referred students to the CML Lab. We foresee increasing utilization of the CML Lab by these and other academic departments. In the near future, the availability of the CML Lab to students will be significantly enhanced to meet this increased demand. Each computer in the CML Lab will be licensed to operate all of the tutorial and assessment programs. In its current configuration, the software for the psychology tutorials, for example, is limited to a few machines. We plan to increase the number of computers to fifty. All of these computers will be licensed to operate the tutorials selected by the departments referring their students to the CML Lab. We further plan to upgrade the file server to support the increased demand placed on the local area network by these enhancements.

Project EMERGE
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Tulsa Junior College designed the EMERGE Program to provide educational opportunities for clients of the Oklahoma Department of Human Services who receive Aid to Families With Dependent Children. The EMERGE Program is a three-level adult literacy and mathematics skills program with three primary goals. All goals involve student success with the first goal being GED attainment. Preparation of students for a post-secondary education is the second goal. The goal is to assist students in developing human relations skills and job seeking skills as well as successful employment practices. The EMERGE program is an excellent example of preparing the under-prepared student through the use of technology and applying those skills in each of the goal areas.

1. GED ACHIEVEMENT — Sixty students are admitted each semester into one of three tiers:

- The fifteen students in Tier I should pass the GED examination after completing one semester in the EMERGE Program.
- The thirty students in Tier II should pass within two semesters.
- The fifteen students in Tier III should pass within three semesters.

EMERGE students attend classes daily at Tulsa Junior College for approximately twenty-two hours per week. Classes are structured similar to college classes, with individual course instructors and four periods per day. GED classes are augmented by individualized computer-assisted instruction using Josten's INVEST System. The INVEST program is used daily to reinforce information acquired through lecture, application, or reading.

Designed for Adult Basic Education and GED preparation, INVEST offers individually prescribed, self-paced, computerized instruction in reading, writing, math, and keyboarding. Students may also access life skills lessons such as balancing a checkbook or buying a used car. The INVEST instructor initially gives instruction on computer usage, then administers tests for diagnostic and prescriptive evaluation. Students in EMERGE receive reinforcement of all class instruction through daily assignments on the INVEST Computer Learning System.

2. PREPARATION FOR POST-SECONDARY EDUCATION — Attending GED classes on a college campus provides an appropriate environment for adult students. In addition to lessening the students' first-semester anxiety, the environment also allows them to make a smooth transition into a post-secondary program. To prepare them for successful enrollment in a post-secondary educational program, students are given assistance with financial aid packets, enrollment procedures in post-secondary education or training, and realistic educational and career goal-setting. In addition, areas such as conflict resolution, negotiation skills, study habits, and test-taking skills are explored. There are currently forty-two students enrolled in a post-secondary program after successfully completing the EMERGE program. Prior to entering a post-secondary program students are given a computerized College Placement Test (CPT).

3. PREPARATION FOR PRODUCTIVE EMPLOYMENT — During the fourteen-week academic semester, EMERGE students attend four Career/Personal Development classes each week which include life skills training, parenting skills, oral and written communication skills, job search techniques, interview skills, on-the-job social skills, methods in problem solving, and instruction on work ethics and values. After each fourteen-week academic semester, students may attend a seven-week career academy. While attending the career academy students use computers for career assessment and evaluation. Students also use computers for word processing, life skills reinforcement, and written business communications. Computerized career exploration programs such as SIGI, DISCOVER, CAPS, COPS, and COPE, are utilized to access students' interests, abilities, and values. The results of these assessments provide basic career information for the students to explore further with their instructors, specialists, and counselor.

EMERGE classes are highly structured. The low student-instructor ratio allows for small-group interaction and one-to-one assistance if needed. The use of technology plays a significant role in the development of critical-thinking skills through the application and evaluation of knowledge on a daily basis. In addition to the INVEST lab, the CPT, and career-exploration programs, other uses of technology include:

THE FACET CENTER. As computer literacy is developed, the students are introduced to the FACET Center -- a networked multi-media computer center combining developmental and college-level programs in computer programs, English, mathematics, science, and social science. The FACET Center also offers many computer-related opportunities to all Tulsa Junior College students, such as CD-ROM programs, a scanner, numerous programming languages, and access to the INTERNET through NETSCAPE, as well as a variety of word-processing and spreadsheet programs, Students will continue to use this knowledge throughout their college careers. EMERGE students work on GED skills builders, simulated GED tests, and an array of other educational materials in the FACET Center. Instructional assistance and tutoring is also available.

THE LEARNING RESOURCES CENTER (LRC). Technology is available for students to locate information for class assignments and to obtain financial aid information. Through the on-line catalog or CD-ROM-based abstracts, students gain skills in locating resources for post-secondary coursework.

THE MULTI-CULTURAL LANGUAGE CENTER (MCLC). This multi-faceted language lab offers all TJC students access to state-of-the art equipment for studying languages and other countries and cultures. Primary focus for the EMERGE student includes the use of software programs such as PCGlobe to gain skills in social studies. Students also have access to VCR/videotape combination units in the MCLC to practice interviewing skills while enrolled in the EMERGING Career Academy.

Graduation — a celebration of success. The EMERGE program began in January 1993. Each semester fifteen students are expected to receive a GED. However, each semester the number of graduates has far exceeded fifteen. A total of 118 students have graduated from the program. Forty-two are currently enrolled in a post-secondary program, thirty-two are employed full-time or part-time, and twenty-seven AFDC cases have been closed or are no longer receiving AFDC benefits.

Technology — a key to success. While many factors contribute to the overall success of the students, the creative applications of the available technology make EMERGE unique among GED attainment programs, placing the program among the highest success rates in the country.

REACHOUT Project
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In a unique 1994 pilot project funded by the Alfred P. Sloan Foundation, Rio Salado Community College selected twelve GED students to participate in a distance learning environment. Computers were installed in their homes and the students then took credit classes in computer applications in a computer lab experience identical to the labs which Rio Salado has located throughout the 9,220 square miles of Maricopa County. The intent of the pilot was to provide at-risk students with an opportunity to experience self-paced learning at home in an effort to eliminate many of the barriers that interfere with at-risk student success, including child care, transportation and work schedules. A second goal of the pilot was to ease the transition of these students from a GED environment into a college setting.

Due to the success of the pilot project, Rio Salado received a second, two-year grant to expand the program. The expanded program is designed to serve sixty GED graduates and/or at-risk students. These students are enrolled in a certificate or degree program in Computer Usage and Technology. Students progress through basic computer skills and applications to complete a Level 1 Certificate by completing 16 credits in subjects which include keyboarding, basic computer usage, spreadsheets, database management, Windows, word processing, computer setup and maintenance and graphics. It is anticipated that 60 percent of the students will attain a Level 1 Certificate. These students may then choose to continue to a Level 2 Certificate.

In order to complete a Level 2 Certificate, students choose an area of specialization from Electronic Workplace, Networking or Programming and Database Management. Specific course requirements in each area include:

ELECTRONIC WORKPLACE

- Business Systems Analysis and Design
- Desktop Publishing
- Clerical Machine Transcription

NETWORKING

- Computer Configuration and Enhancement
- Local Area Network Operations
- Advanced DOS
- Local Area Network Planning and Design
- Local Area Network Installation

PROGRAMMING AND DATABASE MANAGEMENT

- Advanced Database Management
- BASIC, Pascal or COBOL Programming
- C or C++ Programming
- Business Systems Analysis and Design

It is anticipated that 40 percent of the students will complete the 33 credits required for a Level 2 Certificate.

Students who complete the AAS degree in this program will take 4 credits of restricted electives in either any Business/Personal Computer course, any Computer Information Systems course or any Office Automation Systems course. They will also take 15 general education credits in English, Communications and math. It is anticipated that 20 percent of the participants will complete the AAS degree program.

The current grant includes a full time instructor, a full time lab technician and a part time counselor available to the students in person, through an electronic bulletin board and by phone. As the program progresses, it is apparent that while the students need an instructor specifically assigned to them, the instructor can handle more than 60 students. Accordingly, as the college expands the program in the future, the instructor will be responsible for a student load more appropriate to a typical teaching assignment in an open entry lab (approximately 150 students).

Technical assistance is needed since the hardware being used in this program is surplused equipment from the school's computer labs and prison sites. This equipment must be installed in students' homes by a qualified technician. As the program moves toward further expansion, the technician is responsible for investigating more comprehensive bulletin board software such as First Class or Lotus Notes and for developing courseware which can be available to students on the Internet.

At-risk students are more likely not to complete educational programs due to personal issues which take precedence over classes. The counselor in this program is working with the students to develop coping skills so that they can handle personal issues while continuing to keep up with class work.

Students in this program also have access to financial aid advisement and academic counselors. In addition, they may also post messages to the group using e-mail. The applicable software for the course is modem-delivered through a screen capture method which provides access without the local installation of the software. Students are provided with the screen capture software which resides in a 3 1/2" diskette used in the floppy drive of the computer.

Students selected for this program are not "typical" college students. Many of them did not complete high school, but have a GED (high school equivalency) diploma. Some of the at-risk factors involved are physical limitations which make it impossible for students to leave home to go to class: child care problems, lack of transportation and a general lack of information about the logistics of college such as application, registration, financial aid, advisement and tutoring. By making this information available to this population, the college has realized a population of potential students who might not otherwise pursue post-secondary education.

It is anticipated that this program will be absorbed by the college at the conclusion of the grant period. In addition to the Basic Education program, many community service agencies have started to refer students to the program. Approximately 40 computers will be surplused each year from Rio's computer lab sites and will be available for installation in students' homes and other sites. Personnel for the program may be shared with other departments, making the project more cost-effective.

Since the pilot project was started in 1994, all departments which are affected by the grant have been involved in the evolution of the program. In-kind contributions of personnel, expertise, resources and equipment have been received from Student Services (academic advisement), Information Technologies Services (hardware and distance learning facilities), Marketing (brochures) and the Faculty Chair for Counseling (hiring a program counselor). Assistance of this type has contributed to the ongoing success of the program, and will make the transition of REACHOUT from a grant funded project to a college-supported one (institutionalization) much smoother.

Summer Science Academy: Developing Inquiry Skills
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The Summer Academy Program was established by the Oklahoma Legislature for Oklahoma's most qualified students who are in the secondary grade level. Academies are established in the areas of science and mathematics for the purpose of providing enrichment activities in the scientific process, math analysis and interdisciplinary activity.

The Summer Academy at Oklahoma City Community College addresses the findings of several studies that state the vast majority of students entering secondary schools lack the basic skills required to be successful in rigorous science programs. During the summers of 1991-1995, Oklahoma City Community College offered Summer Science Academies in Biology. This was a commuter academy for an average of 36 participants per year. The main goal of the academy was: "Development of Inquiry Skills". The basic goal was achieved through these objectives:

1. Develop and offer a three-week program for 5 days per week that presents scientific tools and technology needed to collect and analyze data by using the inquiry thought process, and to report the results of a research project.

2. Increase student knowledge in the design and conduct of experiments, in the utilization of necessary instrumentation and technology, and in the necessary skills to report results in both wet laboratory experiences as well as outside ecological/geological laboratory activities.

3. Increase student awareness of the application of scientific research to the real world and to science-based career opportunities in Oklahoma.

To accomplish the above objectives, OKCCC recruited students from the greater metropolitan area high schools. The college is in close proximity to schools with large percentages of minority and disadvantaged students. The academy was held Monday through Friday, and students were in laboratory activities from 9:00 - 4:00. Three all day field trips were taken to several sites to apply principles discussed in the laboratory. Recreational activities were planned for the lunch hour as well as from 4:00 - 5:00 p.m.

The Summer Science Academy in Biology emphasized Active Learning.

Active Learning

(1) Students were exposed to a multiplicity of opened-ended activities.

(2) Students were encouraged to constantly ask:

(a) What?
(b) How?
(c) Why?
(d) What if?
(e) Why not?

in an effort to raise questions that could be investigated with the equipment or innovative technology procedure at hand. This was done to help them conduct inquiry for the Summer Academy Project or a future high school lab project or science fair project..

(3) Students were required to follow the scientific method and to realize applications of any potential solution for a given project.

(4) As stated by Judith E. Miller and Rondal D. Cheetham, the project-oriented mode of Biology Instruction has been shown to have several benefits:

(a) "Students move quickly beyond the simple memorization of facts to the process of creative problem solving."
(b) Students interact, share ideas and cooperate.

(5) We have observed similar outcomes in our Summer Science Academies.

(6) A significant aspect of our academy was the use of video taping in the lab and in the field. We discovered a myriad of uses for video tape media such as:

(a) Reduces verbiage.
(b) Minimizes chalkboard presentations.
(c) Improves clarity and understanding of assigned tasks.
(d) Conserves teacher time and energy.
(e) Allows more time for laboratory supervision.
(f) Reduces time students spend with "nose in book".
(g) Allows the student to review, to catch up or to work ahead in an individualized mode of instruction.

The goals of the 1991-1995 Summer Science Academy were accomplished. Inquiry method skills were developed by the students. Using this method in scientific investigations enhanced awareness and interest in the scientific thought processes as was applying this scientific information to the real world. The students developed their inquiry investigative skills in the laboratory as well as in the field experience. These activities enabled the students to do the following:

1. To use the scientific thought process.
2. To propose proper questions that can be tested.
3. To present data in tabular or graphic form and to use and to process the data in terms that the scientific community can understand.
4. To prepare a written report that communicates what was done in the experiment (project) and to deliver the results in a clear and concise fashion.
5. In addition, the image and profile of OKCCC in the Oklahoma City area were significantly enhanced. We were able to conduct a program reserved for 4-year institutions on a local basis to meet neighborhood needs of secondary students interested in science. The positive experiences of our academy serve as a recruiting tool to attract gifted talented students to our college.
6. Finally the academy allowed for more creative and nontraditional uses of the OKCCC college facility during the summer time.
7. Oklahoma City Community College was funded for a sixth academy for June 10-28, 1996.

The System for Applied Individualized Learning ("S.A.I.L.")
Central Florida Community College
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(352) 237-2111
C.E.O.: James H. Hinson, Jr.
Contact Persons: Teresa Lewis, Donald R. Hunt

The System for Applied Individualized Learning ("S.A.I.L.") program is a vocational preparatory instruction program whose main responsibility is to improve the basic skill levels of vocational students. Vocational students lacking adequate reading, math and language skills as determined by the Florida Department of Education are referred to the S.A.I.L. Lab for remedial instruction. Ultimately, the primary objective of the S.A.I.L. program is to assist vocational students, a large number of whom are minorities, to achieve success in their vocational programs. This objective is accomplished by providing the latest technology in computerized remedial training and by providing a one-to-one relationship with each student.

The S.A.I.L. Lab encompasses five main concepts: Diagnosis/assessment, interview, prescription, management and evaluation. Each component of the program is integrated to promote successful completion of the remediation process. During the Diagnosis/assessment phase of the program, students are tested within the first six weeks after enrolling in a vocational program. The following are the four Florida state approved tests used to determine each student's mastery of basic skills: Test of

Adult Basic Education ("TABE"), Adult Basic Learning Examination ("ABLE"), Comprehensive Adult Student Assessment System ("CASAS") and Spanish Assessment of Basic Education ("SABE"). Some community colleges may also use the Computerized Placement Test ("CPT"), the American College Testing Program ("ACT") or Assessing Student Success in Entry and Transfer ("ASSET"). Once the students' educational strengths and weaknesses are identified, the student is referred to the S.A.I.L. Lab for individualized instruction.

During the next phase of the S.A.I.L. program, an interview is conducted with each student to gather the data necessary to register the student in the S.A.I.L. program. Any clues to the student's unique needs are noted and used by a learning manager to assist in the planning of the student's individualized instruction. This facet of the process is particularly important for minority groups such as English for Speakers of Other Languages ("ESOL") or students with disabilities who may have particular learning needs which must be met in order for them to achieve successful completion of the remediation process.

Following the interview process, learning managers develop a learning prescription for each student in the areas which require remediation. Currently, Central Florida Community College ("CFCC") uses two highly sophisticated remedial programs to assist S.A.I.L. Lab students with remedial instruction: PLATO and INVEST. Each prescription is derived from the student's placement test scores as they correlate with grade levels of accomplishment. These programs are specifically designed to meet the needs of special populations because they provide modules intended for ESOL students, as well as providing multi-sensory feedback. One of the primary features of both PLATO and INVEST is the use of repetition. For the student with special needs, the learning managers believe that the combination of repetition, audio-visual, and kinesthetic training are extremely important learning tools. Since learning in the S.A.I.L. Lab is not "time-based" but "student-based," the students are encouraged to repeat the learning material as many times as needed to master the skill at hand. Progress checks are an integral part of each student's learning prescription; mastery is measured at 85 percent or above. When deemed necessary, supplementary materials are incorporated into the student's prescription, in addition to the computerized tutorial programs. The use of computerized technology in the S.A.I.L. Lab provides an effective, efficient means of providing remediation.

The computerized tutorial's ability to individualize instruction, provide instant feedback and actively involve the student in a non-threatening manner is an ideal use of the latest educational technology to meet the needs of students who utilize the S.A.I.L. Lab. The computer-based instruction programs have the ability to build self-esteem and encourage active participation by providing instant, positive reinforcement when the student answers correctly. The PLATO and INVEST programs give the learning manager the flexibility of working with individuals or small groups, while the technology provides for individual learning activities.

The responsibility of the S.A.I.L. Lab learning managers is to monitor the student's progress and motivate students as they progress through their learning activities. Additionally, the learning manager observes the students, providing clarification of learning activities when necessary. The managers are also responsible for maintaining an open line of communication with the vocational instructors, keeping them informed of the student's progress in the lab.

The evaluation of the remedial process involves assessing whether or not the student has learned the instructional material and if the needs identified during the assessment phase of the program have been eliminated. The PLATO and INVEST programs used at CFCC provide continual, immediate evaluation of the learning modules, allowing the learning managers the opportunity to revise the student's prescription as deemed necessary. Upon completion of the learning prescription, the final evaluation is a post-test using an alternate form of the TABE, ABLE, etc. If remediation is successfully completed, the student returns to the vocational program on a full-time basis.

Vocational Bilingual Training Program
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Traditionally, limited English proficient (LEP) adults have been excluded from job training programs until they attained proficiency in English. However, experience has shown LEP students can complete job training just as successfully and in the same amount of time as their English-speaking peers when the Vocational Bilingual Training (VBT) model is used. VBT teaches both the job skills and the English language skills needed for satisfactory performance in work environments.

A 16-week Office Specialist Certificate Program, funded through a Carl D. Perkins, Category 1400/Curriculum grant, has been designed for English/Spanish speaking students who have the ability and desire to obtain an entry-level office administration position, but are deficient in English language and basic occupational skills. It takes advantage of the native language skills students bring with them to the program and builds upon this at the same time as English language and vocational skills are developed. The result is a bilingual entry-level office specialist who is able to facilitate and provide the communications needed for the successful conclusion of bilingual business dealings.

The Vocational Bilingual Training model includes four basic courses: Office Administration, Keyboarding, 10-Key Calculator Math and Bilingual Business Writing. Each course contains 80 hours of instruction, 5 days per week, to allow students maximum time for practice and review. The courses have been developed according to the results of a needs assessment distributed to employment agencies, bilingual translation services and corporate human services personnel.

The project has developed written standards for program completion that reflect the ability of participants to perform bilingual tasks in an office setting. A generic system for linking functional context curriculum, incorporating Indicators of Program Quality and basic skills with the SCANS foundation skills and all courses utilize computer aided instruction and the 10-key calculator course uses business calculators and computers for spreadsheet information. Software incorporating SCANS skills and competencies offer learners the opportunity to develop, practice, and apply skills necessary to obtain progress in entry-level jobs. Skills, therefore, are not taught in isolation, but in relation to their actual use. All activities are set in a

work-related context, and students have to solve problems that require them to perform a cluster of skills to find the solutions. Innovative computer-simulation allows learners to explore a variety of career-paths. Interactive graphics and real-life situations bring the program to life--delivering high interest, motivation, and hands-on experience. Students will also be able to access the computerized PLATO Job Search Course to learn job-seeking skills, including resumes, cover letters, application forms and job interviews, as well as the JOBS Lab, which offers computer-based pretests, lessons, and posttests for office administration. In addition, a microcomputer program is used to measure Spanish and English language competence, evaluate the strengths and weaknesses among an individual's oral language, reading, and written language abilities, and compare Spanish to English language abilities.

Classes are taught in a self-paced learning center, with a combination of instructor directed lessons and student selected work. Much class time is devoted to individual and small group work, with assistance from the instructor. The program emphasizes skills that can help in life-long learning and be transferable to a variety of settings. Understanding the culture of the American workplace and the unique culture of the place of employment is essential to LEP employees' abilities to keep their jobs and be promoted at work. Cross-cultural and equity training is, therefore, provided throughout the program. Students will be assisted in finding jobs per cooperative agreements with the college. This cooperative work situation will give students an opportunity to experience a real work for pay environment in a sheltered situation for a period of twelve weeks following the completion of courses.

A formative evaluation process is used to measure the extent to which the objectives and timelines are being met. Participant program evaluations will reflect their opinions about the service received. Selected staff members will also conduct informal interviews with participants to get additional feedback about whether the program is meeting their needs. The structured component of the formative evaluation will consist of monitoring and reporting the progress of each objective as measured through the successful completion of the specific tasks outlined in the work plan.

A summative evaluation will be conducted to assess the impact of the overall Vocational Bilingual Training Program:

1. Overall student outcome measures: Learner outcomes will be evaluated using data obtained through pre-and post-tests using standardized instruments; criterion-referenced tests developed for the course of instruction; record of observations by instructional and other staff members; self-report data gathered from learners in interviews and questionnaires; portfolio assessment. Assessments to provide data on how well instructional objectives are being met and competencies learned both in the training setting and in the workplace will include: trainee, supervisor and coworkers feedback; conferencing and portfolio collection; competency checklists; simulations of job tasks and performance tests.

2. Program outcome measures: a minimum of 70 percent of participants will be expected to complete one or more of the following program objectives: attain a Certificate in Bilingual OFAD; attain a Basic Skill Functional Level of (C) as determined by the CASAS; enroll in further educational courses; are placed in an unsubsidized job.

3. Measures of efficiency of management: these will include: Student Evaluations of the Teaching-Learning Process; Classroom Observation; Feedback of Teachers' Performance. In addition, the Advisory Board will evaluate the Local Review Document for Implementation of Indicators of Program Quality in the areas of learner outcomes, program planning, recruitment, curriculum and instruction, support services, professional development, and retention.

As a member of the Texas Workforce Education Consortium, North Harris College will share the following products with other colleges: The Curriculum (including SCANS foundation skills and competencies); Competency Checklists, and Lesson Plans; A Competency-Based Skills Evaluation Model, including Diagnostic Tests; and Cross-cultural Training in the Workplace Curriculum. The Consortium will likewise develop two World Wide Web pages to broaden dissemination of these products and to share research completed as a part of development efforts.

Voice Mail Review: A New Use for Voice Mail

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It is well known that the more exposure a student has to course subject matter, the better the student's understanding is likely to be. This is the underlying reason why office hours, science centers, recitations, tutors and other forms of support have been utilized at the County College of Morris. In the Fall semester of 1995 a new method, using old technology, was created to help enhance the learning experience for under-prepared students. This technique is known as Voice Mail Review (VMR).

An extensive 'listen only' voice mail configuration was established for our Anatomy and Physiology course on a trial basis. The faculty teaching the course were assigned four mailboxes on the voice mail system for the students to access. The messages contained reviews of difficult course concepts designed to focus on frequently asked questions. Each mailbox contained a separate recorded message by the faculty to which the student could only listen. If they wanted to leave a message they had to do so in a different mailbox. The mailboxes could hold one or several messages, each of varying length depending on the degree of difficulty of that material.

The messages were of varying length and were not intended or designed to be a substitute for attending lecture, but rather a supplement. The students could call the faculty phone for a number and gain access to information covering various subjects currently being taught in the course. Once in the VMR the student could navigate the menu from one message to another, repeat messages or fast forward to the end of a particular message in order to access what topics they wanted.

This new utilization for the technology of voice mail was centered around the idea that one of the best places for a student to gain additional information about the subject of the course is from the faculty teaching that course. Tutors and textbooks

are certainly useful tools, but the professor can best direct the student to the level of knowledge required and most effectively guide the student toward the ways to approach that end. The review information is available when the student needs it. The students can access this information from VMR anytime of the day or night. So no matter when they are studying for a test or reading their notes, and need clarification, a review of difficult course concepts is available to them.

It is sometimes difficult for a varied student population to access office hours and recitations because of scheduling. Additionally, under-prepared students may feel inhibited because they fear the embarrassment due to their lack of understanding. By using voice mail as a means of communicating, the under-prepared student might gain valuable information without feeling inhibited.

County College of Morris is a commuting institution and has a high percentage of non-traditional students which typically populate community colleges. This student population was also targeted by the voice mail experiment, since these students only come to County College of Morris for classes and tend to depart immediately.

All students can use the VMR easily due to the general population's knowledge of voice mail and because of the explicit recorded instructions and prompts used. Also, no special equipment is required by the student, such as a computer/modem if the system was based on e-mail technology. Students can access the VMR twenty-four hours per day, so it fits all work schedules and is a local call for most students. Few, if any students do not have a phone, or have not previously experienced a voice mail system.

The VMR can easily be evaluated. The system used at County College of Morris (Aspen Branch XP by Octel Voice Information) can generate reports which track the number of calls to a faculty's phone and to each individual mailbox accessed via that phone number. For example, in the first week of operation there was a total number of two hundred fifty-seven calls to all mailboxes within the VMR faculty's listen only mailboxes. The VMR system cannot determine if one person called all those times or two hundred fifty-seven students each called once. By surveying the student population it was determined that eighty percent of the class accessed information from the VMR and almost all of these students called more than once. Students only rarely heard a busy signal, since the system can handle fourteen calls simultaneously.

As the semester proceeded, the students began to record the messages on to their answering machines so they wouldn't have to call a second time. This technique was particularly beneficial when a toll charge for the student was involved. Some students who recorded the messages on to their answering machines took the micro cassettes and played them during their commuting time to the college.

Most colleges already have voice mail systems and can, with very little expense, provide "listen only mailboxes" for faculty. The amount of storage that the system has may have to be upgraded depending on the number of faculty using the system and the number and length of messages which they record for their students.

In these times with the varied student populations that community colleges typically enroll, it is a necessity to provide students with the techniques so that they may perform to their optimum level. By providing another tool for the student in the form of VMR the chances of that student succeeding are increased.

SECTION II

PROGRAM AWARD WINNER

A Computer Classroom and Improved Writing

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Many community colleges have labs that use computers to assist under-prepared students to improve their basic writing skills. Few colleges have computer composition classrooms that improve the composition skills of transfer students. At Chaffey College, we use the latter for freshman composition, critical thinking, and literature classes. This mode of learning not only gives students incentive to work harder, but it also improves student writing. Using a classroom filled with computers facilitates note-taking and study methods, aids research, provides one-on-one instructor assistance during class time, improves critical reading and writing, stresses the importance of revision, and encourages careful proofreading. Students who learn to write in a computer classroom internalize the knowledge that writing is a process.

Picture this setup. Whiteboards on the walls remain clean and white. Instead, we project information from computers onto a large screen. Every student uses a Power Macintosh for composing. Four students face one another at tables, automatically creating collaborative groups. Software such as Timbuktu or Aspects networks the computers with one another so that the same information can appear on one or more screens simultaneously. This allows students to work individually, collaboratively in groups of two to four, or as an entire class. An NTSC hookup projects text, pictures, videos from a central computer onto a large screen or TV monitor for class viewing; in addition, it can network with all of the computers in the classroom. Several laser printers connect with computers so students can print out their essays. Instructors have access to a workroom with a scanner, printer, and several computers with HyperCard and other multimedia programs installed for preparing instructional materials. Most instructors exchange disks with students for commenting on work-in-progress. We often use voice annotation to make suggestions for improvement; students much prefer oral comments to red ink.

Consider various typical English classroom activities and observe how the computer classroom facilitates the learning process using these activities:

- For note-taking and class discussion: the instructor projects pre-prepared notes/outline/examples from a central computer onto the large screen and simultaneously onto each student's computer screen. This information is clearer and more accessible than when it is scribbled on a chalk- or white-board. When students get lost (unusually immediately after the instructor has erased the board), the instructor can tap a computer key and quickly return to that portion of the information. When students ask questions, the teacher can

easily modify notes by typing in additional information. At the end of the class, students print out the class notes for later review.

- To assist in research: Students have direct computer access to two hundred periodicals in the Chaffey library. They may locate articles, read them on their screens, and incorporate them (correctly documented, of course!) into their own writing. We will soon be connected to the Internet for additional research potential.
- To get direct instructor assistance: Student and instructor can work together on their separate screens to modify and improve the writing. What better way for a student to discover how to organize ideas or delete wordiness than to watch a professional work with text and "make it happen."
- To encourage critical reading: Students may have read several articles that take opposing or differing views on a particular topic. The instructor assigns each collaborative group a different article to discuss and directs their thinking by handing each group a pre-prepared disk with discussion questions. The students (usually designating one student to do the typing) discuss, argue, and record their collaborative ideas. The instructor later can use the responses on the disk to assign individual or group grades. Each group can then present the results of its discussion to the rest of the class; however, discussions seldom remain so formal. Most classes quickly abandon group "reports" in favor of free discussion and open argument.
- To encourage critical writing: After such class discussion, such as the one just described, students may write more penetrating and perceptive arguments of their own. They tend to organize better and give more concrete examples to support their ideas. They learn to acknowledge and credit one another. They certainly never complain that they have nothing to say.
- To emphasize the importance of revision: Students begin drafts on the computer, learning to compose quickly as they go along, more relaxed because they know they can easily correct, modify, and improve the writing later. For the original drafting, they work individually. When they need to try out ideas, their colleagues (their potential readers) are readily available. In addition to discussing ideas, a student can send a portion of her writing to the screens of one or more people in her group and get help with content and style.
- Before submitting final hard-copy drafts, students read their essays aloud as other students follow along on the screen. This final exercise helps them spot any frailties of organization or wording, forces them to recognize that revision is probably never complete, and generally improves the grade.

Learning to write in a computer classroom emphasizes what every composition instructor wants students to learn: that writing is a *process*.

Interactive English Composition via Distance Learning

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The geographic location of Darton's Primary Service Area and the demographic composition of its population make distance learning a critical component of the College's outreach program and enhances the College's mission to provide pre-baccalaureate instructional programs to eligible persons in the College's service area. The Georgia Statewide Academic and Medical System (GSAMS) allows Darton College to provide academic programming to rural areas that would otherwise be unserved.

Darton College recognizes that the unique ability of distance learning to connect remote institutions can play a pivotal role in facilitating the transfer of high-school students to postsecondary educational institutions. Toward that end, the College has established distance learning partnerships with a number of schools within its service area. One of these provides interactive telecourses in English Composition to students eligible for the postsecondary options program (program that allows qualified students to earn college credit while they are still in high school.) at four area high schools. High-school students planning to enter pre-baccalaureate programs find the option of earning college credit while satisfying College Preparatory Curriculum English requirements particularly valuable. At the same time, collaboration between the college and secondary partners involves the facilitation of student transition from high school to college, thus strengthening chances for college courses.

Through the use of special telephone lines, video cameras, and television monitors, Darton is able to connect with its secondary partners in a completely interactive environment that is ideally suited for the offering of Freshman English Composition in a workshop format. The course capitalizes on technology in a variety of ways. In addition to the GSAMS classroom, students utilize the Darton College computer bulletin board, Internet connection, and writing laboratory.

Distance learning allows students to transcend boundaries between institutions. The walls of the individual classrooms disappear and geographical distances become irrelevant as the students come together in one classroom that meets on the air. Interaction between students and with the professor is instantaneous. This instantaneous interaction results from the technology: whoever speaks appears on the television monitor. Thus, the cascading of alternating and numerous faces in no particular order erases the boundaries of the classrooms as individual sites. Furthermore, the voice-activated technology encourages a more active student participation. To be seen, that is to be part of the class, the student must be heard, that is, he or she must speak. Furthermore, the voice-activated video technology has the advantage of not necessarily making the professor the focal point of the class and so encourages peer-based learning to its fullest extent. In summary, distance learning allows some of the more traditional boundaries of passive and contained

learning to disappear. It is ironic that television technology, which we associate with passivity, becomes such an active tool in learning.

The hands-on learning experience of the classroom in which all students are physically present in one locale is not lost in the distance learning classroom, however. Thus, students use facsimile machines to share with all sites their writing-in-progress. In addition, the professor is able to collect timed in-class essay tests via facsimile and return these and other assignments in a manner at least as timely as in the traditional classroom. Another advantage of using the facsimile method is that the professor is able to retain copies of the students' work for monitoring of future progress.

The distance learning classroom is also supported by periodic personal contacts between the college instructor and high school supervisory staff and students. Phone office hours as well as the availability of e-mail communication also facilitate interaction between students and instructor. This use of technology has the further advantage of encouraging students to explore research opportunities on the Internet.

Darton College is committed to the success of distance learning and the success of students in distance learning classes. Students taking English Composition courses via GSAMS currently have a 100% completion rate and receive an average grade of 3.0 on a four point scale upon successful completion of the course. In comparison, students taking English Composition in a traditional classroom environment have a 76% completion rate and receive an average grade of 2.01.

The University Center and Project Interconnect
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Northwestern Michigan College, a community college in rural northwestern lower Michigan, has created a University Center in partnership with twelve of Michigan's public universities and private colleges. Through the University Center, 40 baccalaureate completion, master's, and certificate programs are offered for residents of northwestern Michigan who are geographically isolated from baccalaureate and graduate degree-granting institutions. A unique component of the University Center is the delivery of courses via a network of two-way audio/video interactive technology (ITV). The University Center opened in the fall of 1995 with nearly 700 students. Enrollments have increased to 900 for the 1996 winter/spring semester.

ITV instruction originates from the university campuses and is transmitted to three ITV classrooms on the University Center Campus in Traverse City or to any of fifteen ITV classrooms in high schools throughout northwestern Michigan. University faculty also travel to the University Center Campus in Traverse City and teach in the traditional classroom setting. The university partners provide local admissions, registration, academic advising, financial aid, electronic library services and all courses required for the completion of the final two years of selected bachelors

degree programs or the fulfillment of requirements for selected graduate or certificate programs.

The University Center and Project Interconnect were created in response to the persistent expression of need for expanded higher education opportunities and alternative methods of delivery. For many, the opportunity to pursue education beyond the associate degree was impossible due to our *place-bound* population. Students enrolled in University Center programs are 70 percent female; 95 percent are working; 65 percent are married and the average age is 35. Sixty percent are alumni of Northwestern Michigan College. Almost half have at least one child under the age of 18 and over half indicate they could not complete their education without the local availability of baccalaureate and master's-level degrees offered by the twelve public and private colleges and universities.

Funding totaling $8.6 million for the University Center and Project Interconnect was raised through a local fund-raising campaign and state and federal grants. The University Center Building is the former Sara Lee Corporate Headquarters and has been remodeled to include three ITV classrooms, 11 general purpose classrooms, two computer labs, an electronic library, 17 faculty offices and conference areas.

In addition, each high school in the five-county northwestern Michigan region has a dedicated classroom for ITV instruction. Northwestern Michigan College has purchased and installed the equipment and fiber-optic linkage for voice, video and data transmission to and from each high school. During the regular school day, the K-12 schools have priority scheduling for the interactive classrooms and share curriculum with one another. After 4 p.m. and on weekends these classrooms become satellite campuses of Northwestern Michigan College and University Center institutions.

When the Northwestern Michigan College University Center opened in August of 1995, 55 courses were taught "in person" by faculty members from the partner institutions and 17 were taught by university faculty via the ITV system. This winter/spring semester, 115 courses are being offered; 35 via ITV. Northwestern Michigan College and the University Center partners have the capacity to teach six different courses simultaneously via ITV. By the fall of 1996, our maximum capacity for ITV delivery will be reached, a testimony to the success of this method of educational delivery to rural populations. Plans are underway to increase our ITV capability to meet this growing demand.

A key to the success of interactive distance education to students in northwestern Michigan is extensive training for faculty, staff, site facilitator and student users. Northwestern Michigan College received a $1.4 million W.K. Kellogg Foundation grant to provide training at the university, community college and K-12 levels which includes actual re-structuring of course materials with the assistance of an instructional designer. Students are introduced to this new method of instructional delivery via a video which is on during the first session of an ITV course. Faculty encourage student interaction, group projects, oral presentations, and discussion using the technology at each site to its fullest potential.

Follow-up surveys conducted in December of 1995 indicate that students give high marks to Northwestern Michigan College for developing and implementing the University Center and Project Interconnect. In the spirit of continuous improvement, the University Center has formed a Student Advisory Committee to provide direct, continuous feedback to partner institutions on such areas as degree offerings, instructional quality, ITV delivery, and student services.

Arts and Humanities Computer-Assisted Learning Project
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Two instructors in the Foreign Language and Speech Departments, Arts and Humanities Division have implemented teaching and learning programs using available presentation software as course project formatting tools. In the Japanese languages 100 and 200 classes, students are required to use either Microsoft's Powerpoint or Asymetric's Multimedia Toolbook 3.0 as the presentation format for their final course project. In the Speech Communication Small Group Communication course, students use Multimedia Toolbook 3.0 as the theme in exercising concepts such as formulating project goals, vision sharing, team building, forming consensus, resolving conflicts, and systems thinking while focusing on completing a course group project. The Japanese and Speech courses are not multimedia computing courses and are not designed to teach multimedia computing concepts.

Both instructors use a student-centered learning approach in which the computer presentation software's structure is used as the theme to build the lesson modules around. For example, in the Japanese language classes, students are taught the basics in oral interpretation of the Japanese language, and are then asked to develop oral presentations around the lesson modules on topics of their choosing. In the Speech course, the students are required to develop their project around the "book metaphor" theme of Multimedia Toolbook. Students are taught to design their small group projects around distinct "chapters," thereby generating a collaborative learning environment.

The basic pedagogic theme for both instructors is Peter Senge's concept of a learning organization and the five disciplines defined by Senge (systems thinking, personal mastery, mental structures, shared vision, and team building) in the book, The Fifth Discipline. The classroom environment is transformed into a learning organization, and students are responsible for the application of the five disciplines as they design and produce their multimedia presentation programs. Using concepts from project management, both instructors defined and scheduled five milestones throughout their courses, so students have definable targets to strive for. The milestones are: (1) project goals and individual tasks and responsibilities, (2) research available supporting materials for the project and group consensus of project goals, (3) text outline and storyboard of project, (4) rough draft presentation (80% complete) of project, and (5) final presentation of project. At each milestone, students' groups are required to present their progress. Each group is graded according to the quality of their presented work at the milestone. The milestone presentation period is also used as a time where all students and the instructor have an opportunity to provide feedback and constructive inputs on all projects.

The evaluation of learning criteria used are: (1) teamwork and ability to work in a small group to complete milestones one and two (20% of grade), (2) ability to agree on text outline and develop detailed story board (20% of grade), (3) demonstrate ability to follow detailed storyboard and to make adjustments as necessary to implement the storyboard plan to a Multimedia Toolbook or Powerpoint presentation program (30% of grade), and (4) to present a final project in final form that has a standard of excellence that clearly demonstrated learned course content, and Senge's five disciplines (30% of grade).

The computer learning program is designed as a student centered learning activity to enable students to apply concepts and definitions discussed in the classroom in computer assisted self-designed mini-projects that may be incorporated into the final course presentation project. For example, since both Powerpoint and Multimedia Toolbook are multimedia computer programs, students are required to develop skills in sound and still images digitizing into formats that may be used by the multimedia software programs. Additionally, students are required to be self-directed in learning the multimedia software while at the same time being responsible for the course content.

As students progress toward the milestones, the quality of discussion, hence, the quality of the learning environment evolves from definition clarification, to deep learning of the content, to concern about developing a presentation of the content to a specific audience. This transformation progresses from understanding of definitions to procedural learning. The analysis of the content of the course goes from "what?," and "why?" to "how do you?," "how are concepts interrelated?," "What does the content topic mean?," "what is the most effective presentation medium?" and "will my audience understand what I am attempting to explain?" The discussion of content and procedure that the two software programs help students to focus on are the application of definitions and concepts. The learning highlights that the multimedia software is a computer tool and the actual leaning rests in the active participation of students interacting with the discipline content.

The use of presentation software enables students to better understand the concept of systems thinking and how learning activities are intertwined with transforming definitions and concepts into meaningful learning.

The procedures used by both instructors are applicable to other programs and to other institutions. The minimum hardware and software required are a multimedia computer and the applicable software programs. The pedagogic foundation is student-centered learning and the thread that ties content to the computer assisted structure is systems thinking.

Finite Mathematics Using MathCad
A Computer Intensive Approach

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Often times, there exists a chasm between classroom mathematics and real work mathematics. Typical textbook examples work out nicely, but rarely model actual data very well. Technology is the bridge to link these two realities.
Students from diverse educational backgrounds enroll in a finite mathematics course, mostly those considering business related fields. Students entering the program are required to have a certain proficiency in the elementary ideas of algebra. Their exposure to technology should be commonplace. This program allows students the freedom of mathematical exploration without the drudgery of computational efforts. This type of investigation, when guided by theoretical underpinnings, can lead students to discoveries too cumbersome to contemplate with paper and pencil. The student becomes engaged in the course material, not just a recipient of knowledge. The students actively participate in the daily mathematical undertakings. The computer helps to develop the student's understanding and stimulate the student to incorporate problem solving skills and mathematical reasoning. If a student has a conjecture about a certain problem, he can easily verify the solution. Students are encouraged to think mathematically so that they can learn to reason and solve problems. This type of learning environment strives to promote a positive attitude towards the way students think about mathematics and helps to promote mathematics as an ongoing human activity.

The primary mode of delivery for this program takes place in a classroom laboratory setting with 36 Pcs on a Novell Network. The hardware is of the 486/DX variety and students have access to a high quality laser printer. Students work individually, but collaborative opportunities are presented. A brief period of time is spent familiarizing the students with the particular features of Mathcad. Each traditional topic in finite mathematics is then implemented using this software package. Students use the computer for all quizzes and examinations. Outside of class projects supplement and reinforce the students' understanding of key ideas. A student lab is available evenings and weekends. Some students purchase the program. A student version, at a reduced price, is available through the bookstore.

Transfer students benefit from exposure to technology, and the marriage with mathematics seems natural. This program can be readily adapted with other forms of technology, so that an institution is not locked into a particular piece of software. Measures of success include traditional forms of assessment relating to course content and informal discussions regarding the transferability of skills. Ideally, students will possess a more logically rooted basis for problem solving.

Interactive Multimedia Instructional Materials for Use in the Biology Laboratory

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This multimedia project was developed to improve the undergraduate student's understanding of abstract cellular and molecular concepts in general biology laboratory.

General biology labs involve concepts (cellular and molecular biology) which are difficult to show using conventional transparencies or chalkboard drawings. Many concepts consist of processes which require animation or movie clips to adequately portray the material. In addition, topics included in introductory biology labs require the use of a microscope and students often have difficulty knowing what they should "look for". Demonstrations on the use of the microscope are also difficult to show the entire class simultaneously. Many part-time and full-time instructors do not have the time to access and develop multimedia instructional materials to accompany the biology lab sessions, even though it would solve the problems mentioned above.

At Palm Beach Community College, a set of multimedia instructional materials have been used in this project to address these problems. Through the use of computer generated text and visuals combined with laserdisc movies and still images projected for the entire class, abstract molecular concepts are reinforced and explained. Important concepts can be presented at the beginning of the lab period in a short time with a prepared multimedia presentation.

Students are shown in the presentation exactly what they should "look for" under their own microscopes. Students see a demonstration on the use of the microscope on a large screen display. Since the permanent multimedia lab station is usable by the students during the rest of the lab period, students can check their own progress by operating the computer. Students can also run self-tests using the computer station during the lab period.

The need for adjunct professors to spend extra time preparing these materials is also eliminated. After the initial training each lab instructor will have access to the same multimedia instructional materials. These materials will be linked to laserdisc (full motion) images, CD-ROM images, and paintbrush images (created by the director) which illustrate biological concepts visually.

The curriculum package is written to enable the user to navigate through the program with ease. A permanent multimedia lab station (which includes the computer & CD-ROM, projector & laserdisc player) will become part of the biology laboratory and be accessible to all biology lab instructors, as well as the students themselves.

Adaptability

Workshops and training sessions for all lab instructors prior to the beginning of the term in which they will be teaching are held. Instructions within the program are

given to anyone using the materials on the computer, so that they can be utilized in the student Center for Personalized Instruction.

All lab instructors may integrate the new materials into their sections without the need to spend time developing them.

Measurements of Success

The effectiveness of the use of the multimedia instructional materials used in biology labs will be evaluated in several ways:

1. All biology labs will conduct student and instructor surveys to measure the success of the use of interactive multimedia materials in their course.
2. The program will be made accessible to students in the CPI (Center for Personalized Instruction) which was the focus in PBCC's nomination in 1995's NCIA Program Awards. Students will be able to use the materials on computers in the CPI outside of their normal class time. Student usage and performance on quizzes and tutorials will be monitored electronically and evaluated at the end of each semester.

Adaptability

With the use of the multimedia instructional package for biology labs, undergraduate biology students have a visual component added to the lab which will enhance their learning of difficult concepts.

Instructors are trained in the use of the multimedia materials in the lab and have the aid of multimedia visuals without the need for time-consuming programming or preparation of those materials.

Internet Classroom Application
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As any business and technical writing instructor knows, audience is arguably the most important consideration when one composes a professional document. Audience, above all else, determines how a document may be composed, whether it should be formal or informal, technical or non-technical. Audience also guides the purpose of a document, whether it should be explanatory, and/or instructional, and/or persuasive. But most importantly, audience may continually compel a writer to acknowledge the value of precision and coherence within any given document; and for these reasons, the Internet has become an especially useful learning medium for encouraging a stronger awareness and appreciation of audience.

During the past year, we have been using e-mail in our business communications classrooms to demonstrate and foster the integral relationship of audience to

professional writing. To do so, we have linked, via e-mail, business and technical writing students from our respective campuses in Auburn Hills, Michigan and Bismarck, North Dakota.

Originally we planned only to assign e-pals between our classes as a means of allowing our new students to become more knowledgeable about and comfortable with online communication. And while this link proved successful as a simple Internet learning tool, we soon began exploring other, more complex pedagogical applications. Hence, we quickly concluded that since the Internet is chiefly a reader-based medium--and by that we mean that the writer must necessarily move out of his/her writer-based mode in order to communicate successfully and that if he or she does not, it will become very apparent in any subsequent discourse--we decided to incorporate into our lesson plans mutual assignments for our respective students that, through the online medium, might introduce and encourage them to become more audience-sensitive.

One such assignment was the "Bad-News Adjustment Letter." This letter, like any business document, must at all times consider the reader's reactions to information that is both negative and dissatisfying. The writer must strive to carefully explain why a customer's request is being denied, while at the same time attempting to maintain the customer's goodwill. Thus, by its very nature, the "bad-news" letter heightens audience awareness and, for our purposes, provided an excellent primer for further focus on the importance of audience in business and technical writing. To begin this exercise, each student-team was asked to create a fictional audience and context within which to create their "bad-news" letters.

After students uploaded their letters to their e-mail accounts, they mailed them to each other for peer review. We provided some basic guidelines for review, but otherwise students were free to contribute whatever additional commentary they wished to include. The criticisms and commentary from students were not substantially different from peer review in a real-life classroom; however, when students were asked to evaluate their reactions to this particular exercise, and to all of their online communication during the course of the semester, they discovered what makes the Internet such a valuable medium in reinforcing the importance of audience in any professional discourse community.

Strange as it may be seem, the absence of face-to-face encounter actually encouraged students to work more diligently at creating not only meticulous drafts, but, more importantly, in striving for precision and coherence that might be otherwise less-than-satisfactory in the real-life classroom. We might have assumed that absence and distance would play a negative role in composition, compelling students to be less concerned with form and content. However, to our delight, the obverse was true: Writing to a "real," but not an entirely knowable, audience inspired students toward a greater awareness of audience and hence toward more precision and coherence in their writing.

Students, in their self-evaluations, consistently made reference to their "unknowable" audience and to its relationship to their own writing. For example, one student commented that "the most difficult [part] was trying to put both of our thoughts and ideas together, to make the message effective to the readers." This same student went on to say that "writing to someone you have never personally met makes your writing technique more important. We wanted to make sure our letter sounded professional with the correct spelling and punctuation." Another

student observed that she "felt uncomfortable corresponding with faceless strangers and the effect was the [she] tried to write [her] best so that the 'strangers' would have little to criticize." And still another student offered these telling comments: "The letter written to us to evaluate was in such poor quality. {We} would have been embarrassed to submit a paper like that to [our instructor]."

Our students' commentary revealed that not only did the recognition of audience drive students to create a more favorable impression in both form and content, but that they did so precisely because they were writing to "strangers" who were unencumbered by any niceties commonly associated with face-to-face communication. Furthermore, their recognition of audience assumed a kind of self-reflexive quality when, in receiving less-than-satisfactory submissions to review, they acknowledged that audience played a pivotal role in creating or not creating a healthy discourse community.

Certainly we are not suggesting that such a community cannot be (un)created or that recognition of audience cannot be achieved in the "real-life" classroom. However, we do believe that using online communication makes the relationship between reader and writer more immediate and apparent for business writing students; and ironically, it is precisely this immediacy that makes the virtual environment one that is actually more real than the "real-life" classroom. In short, using e-mail in the business writing classroom replicates and, thus, reinforces what is most valued within and crucial to the everyday work of business and technical writing.

Learning Music Electronically With MIDI
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In 1993, Kirkwood Community College was awarded a grant by the Fund for the Improvement of Postsecondary Education (FIPSE) to support the integration of computer technologies into its music program. Since 1993, a small music technology lab has been a magnet to music faculty and students, who are using the lab as a resource to study music theory, aural skills, improvisation, and music technology itself.

The field of music is changing rapidly as a new wave of employers--advertising agencies, video producers, radio advertising creators, recording studios, multimedia publishing houses, and film makers--demand musicians who know how to use the latest technologies. In many of these new careers, musical talent and ability are not enough; knowledge of technology is also critical, and must be a part of the serious music student's preparation for transfer or a career.

Community colleges also attract another kind of music student: the hopeful but under-prepared musician who has learned to play music by ear, listening to MTV and the radio rather than enjoying the luxury of formal music training. The potential of these students is often untapped. Because they are untrained and under-

prepared for college music courses, they often drop out or fail, essentially denied access to a field in which they may have both talent and interest.

Kirkwood Community College is attempting to speak to the needs of both of these groups of music students by integrating computer technologies into courses in music theory and aural skills and by offering a new course in music technology. A MIDI (Musical Instrument Digital Interface) lab functions both as a classroom and open lab in which students can harness the power of the computer to provide needed review and repetition of basic music skills or to expand exponentially their capacity to compose, orchestrate, improvise, and improve their existing abilities.

Supported by a grant from FIPSE, music faculty members Tim Feldkamp and Allen Koepke reviewed and tested most of the available IBM-compatible music software, and selected twelve software packages for use on the seven workstations in Kirkwood's MIDI lab. They are continuing to look at new software as it becomes available. Since Fall 1994, under-prepared music students in the Introduction to Music Theory course have used MiBAC and GUIDO to build their basic understanding of music. The two-year college music theory and aural skills sequence uses GUIDO, Master Tracks Pro 6, Encore, and Soloist to develop harmony, rhythm, sight signing, composition, notation, and orchestration skills. In addition to the above software, the new music technology course also features Band in the Box, JAMMER, Jazz Pianist, Jazz Guitarist, and RAP-10. Software selections were based on three criteria: appropriateness to the curriculum, adaptability to many levels of proficiency, and relatively short learning curve.

As a FISPE-funded innovation, the Kirkwood music project has been rigorously evaluated to compare computer-assisted learning with learning in the traditional classroom. A nationally normed test (the Aliferis College Entrance Level Music Test), local tests, attitudinal surveys, grade distribution data, and retention data all play a role in evaluating the success of the program. During 1993-94, data were collected in the Introduction to Music Theory and college level music Theory and Aural Skills classes; since 1994, when the MIDI lab opened, data have been collected in the same classes, using the same instruments, but with computer-assisted instructions. Retention improved from 51.85% to 75.0% in college level classes, and from 66.67% to 100.0% in the Introduction to Music Theory class for "under-prepared" student. Aliferis scores improved most in the college level courses, especially in harmonic idioms, rhythmic elements, and total growth (a combination of all Aliferis units). Enrollments have stabilized. Scores in unit tests, especially in the college level courses, are higher. Students are more confident about their ability to perform well after transfer.

Best of all, students themselves report enthusiastically that the MIDI-assisted approach helps them learn. Benefits most frequently cited by students include improvement of learning specific skills, immediacy of feedback, improved creativity, and novelty/enjoyment of learning.

Kirkwood is continuing to refine its use of computers as an integral part of the music program. Unlike many other adaptations of technologies, that often do little more than transfer knowledge to a new format (e.g. from chalkboard notes to an LCD screen or from handouts to diskettes), computers have the capacity to transform knowledge for the serious or under-prepared musician, opening possibilities that are simply impossible without the technology. Faculty members Feldkamp and Loepke have twice been presenters at the League for Innovation's

annual Information Technology Conference, sharing their excitement about the effect of computers on teaching and learning, and urging their audiences to consider similar innovations. Their lists of lab hardware and software, along with syllabi and progress reports summarizing Kirkwood's evaluation data, are helpful to any music department desiring to seize the potential of computer-integrated instruction.

Multimedia Instruction for the Humanities
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Lisa Stokes, Ph.D., is a humanities teacher at Seminole Community College. She, with the technical expertise of the Media Services Director, has been developing and using interactive multimedia instruction for the past several years in the Humanities courses she teaches, including Renaissance and Baroque, 18th and 19th Century, Latin American Humanities, and Humanities and Technology for the 21st Century. She has included instructional in-class computer presentations to supplement lecture and discussion as well as programs for in-depth investigation which students work on independently outside class at library multimedia stations.

Many studies have demonstrated that students learn faster and retain information better if it is delivered through sensory stimulation.

Dr. Lisa Stokes has said, "It's our responsibility as educators to develop materials that take advantage of this format and provide students with a learning process that not only increases their knowledge but also develops their critical thinking and encourages their visual and creative learning skills, habits of primary importance at the end of the 20th century." To that end, all of the courses Dr. Stokes teaches have multimedia components which provide a portion of the course material, within and outside the classroom. In class, the interactivitiy is provided through her presence and the computer as conduit for class discussion. Outside class, the programs have interactive components which require students to become active participants in the program content rather than passive receptors.

In class multimedia instruction programs are available to students who miss class or wish to review class material. Independent programs allow students to pursue more in-depth instruction which class time does not permit. For example, students enrolled in 18th/19th Century Humanities are able to choose an Impressionist or Post-Impressionist painter they've studied in class and are interested in, and can view a documentary on the artist's life and art, listen to and analyze music of the period, see important works of art with detailed images and analysis, review other students' interpretations of the artist's work and add their own to a growing hypertext library within the program. All programs are user-friendly and require minimal skills (e.g., changing LDs or audio CDs and clicking mouse buttons). Programs are also designed to allow students to move around freely--to repeat, backtrack, fast forward, etc. Students with little computer knowledge usually find this a non-threatening and educational program, advanced technophiles are

challenged to provide critiques and ways of improving the programs. Besides learning course content and alternative ways of thinking, students become proficient with technology for the next millennium.

All programs Dr. Stokes created or co-created with the Media Services Director are available for other instructors to use. Most recently, a member of the Social Sciences Department teaching an honors course in postmodernism has availed himself of many of the programs she developed for students in the contemporary humanities course.

The interactive multimedia programs Dr. Stokes has developed have allowed her to tap creative resources, and each new program presents a new challenge. Beginning as practically a computer illiterate, she was encouraged and trained by the Media Services Director. From the purchase of a single laser disc player and a growing LD library to connecting the disc player to a CD-ROM computer, learning the Toolbook program through IBM/IAT (Institute for Academic Technology, Durham, NC), and developing her own programs, Dr. Stokes has become more proficient at each level and is a leader on campus advocating bringing technology into the classroom and giving our students a boost toward active participation in the next century.

In addition to bringing multimedia into her classroom and in partnership with the Media Services Director, Staff and Program Development Office, the Library, and the Arts and Sciences Division at SCC, Dr. Stokes has written more than five projects to launch multimedia instruction at SCC, ranging from equipment and software purchases to faculty training and instructional development. While various other facilities on campus enable students to use computers, a multimedia computer lab has not been created. Dr. Stokes' partnership has been able to assemble a training center for faculty (i.e. three stations in carrels), a portable station for classroom use, and several configurations in faculty offices for those developing instruction. She says her vision includes a multimedia computer center for students which would be open reasonable hours and staffed with technical expertise available for student questions and available to support faculty who are learning multimedia and those who are developing their own teaching materials. In fact, the former usually paves the way for the latter circumstance to occur.

Dr. Stokes has been a guiding force in arranging and presenting workshops which instruct faculty in the use of multimedia and in assisting them in developing programs suitable for their respective courses. Workshops are set up to accommodate faculty schedules and geared toward preparing faculty to "solo" with their ordinal programs that fit their classroom needs.

The Music of Technology: Tuning in for Student Success

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Tradition meets technology as Belleville Area College (BAC) transforms its Music curriculum through innovative applications of computer technology. Throughout history, the study of music has been characterized by a unique meld of art, science, and technology. From Phythagoras' interplay of music and mathematics, to Edison's phonograph, and now to the evolution of sophisticated instructional cyberware, music has embraced and has been strengthened by technology. There is no better example of this integration than at BAC, where faculty employ state-of-the-art technologies to complement the traditional emphases and produce marked improvements in student performance.

As BAC Music instructor Jerry Bolen witnessed the new technology moving from research labs to experimental applications and finally to commercial development, he formed a vision of combining hardware, software and instructional practices into an innovative Music curriculum plan that would prepare his students for unparalleled success. Bolen studied how nationally-known institutions were adapting their curricula. He traveled and researched extensively, even using private funds to visit cutting-edge programs. The new technology impressed Bolen, but its classroom use was sometimes disappointing. He found that many curricula had not fully adapted to these new tools and that the technology was frequently inaccessible to undergraduates. Bolen and his colleagues were determined to fashion a curriculum that would make optimal use of technology and would ensure that even beginning students would benefit.

Music study at BAC still follows the traditional model of *appreciation*, *performance*, and *theory* (formal study). Technologies are carefully chosen to supplement, enhance, and motivate learning experiences -- to augment existing instruction and to achieve the 80% learning retention rate predicted by researchers in multimedia education. This integration promotes individualized learning and frees students from the "lock-step" pace that may characterize classroom learning. The technology empowers students to move through identical material at a pace that fosters individual mastery and simultaneously reinforces classroom concepts. This approach produces increased student participation, comprehension, retention, and success. It also revolutionizes teaching style by empowering faculty with full access to current and future resources; now, they bring the world to the classroom rather than the classroom to the world.

In 1993-94, the first phase of Bolen's plan established a digital piano lab that functions as a multi-purpose facility for both students and faculty. In 1994-95, each digital piano was connected to a computer through a MIDI (Musical Instrument Digital Interface) and music software was purchased. The combination of digital pianos, used in piano class instruction, and Macintosh computers proves an efficient utilization of resources. The lab's central location in the music instruction area is a focal point for the technology-integrated music curriculum and facilitates student-faculty access.

The plan's second phase focused on the listening, performance, and compositional aspects of music education. Students in music appreciation classes access multimedia CD-ROMs in a full multimedia classroom where instructors integrate computer controlled presentations into classroom activities. Additionally, students are proactive in their study and use computer facilities to more fully explore topics presented in class. The technology also enables individualized study and learning experiences in performance classes. A new MIDI sequenced piano course from Alfred Music provides students with "play along" sequences and the *Vivace* system provides the sound of a full symphony orchestra for accompaniment. Students and instructors are empowered to create and change any parameter (pitch, tempo, etc.) of a sequenced performance to enhance their performance and rehearsal objectives. Music Theory students can now access technology that enhances their ability to study, analyze, and evaluate their work and the work of others. This occurs aurally through a computer sound system and visually through the use of *Finale* music notation software on notebook computers and overhead LCD projectors. Traditional four part writing exercises (SATB-Soprano, Alto, Tenor, Bass) are displayed instantaneously and students receive immediate reinforcement of their music writing skills--hearing each exercise exactly as it is being written. The College serves as a national model in this unique teaching of traditional theory.

Continuously being upgraded, the music lab offers software that enhances writing, aural, singing, and keyboarding skills. The *Performer, Freestyle, and Trax* software enables students to compose at the piano and instantaneously transcribe their performance into notation. The core software for Theory students' skill development is *Practica Musica*, which is designed so that faculty can monitor each student's progress through weekly printed reports. Moreover, sight singing skills are expanded through the use of *Claire*, a program with which students vocally input exercises and are evaluated as to accuracy of pitch. All of these programs provide faculty with maximum flexibility in precisely tailoring exercises and materials for the needs of each class.

Belleville Area College's innovative marriage of tradition and technology is demonstrably impacting both student and faculty performance. Since students now learn at their own pace, assume an active role in expanding their knowledge and basic skills, and receive immediate feedback---retention and learning are increasing dramatically. When comparing old and new curricular outcomes, faculty find that the technologized curriculum significantly increases student retention and that student achievement on standardized examinations shows marked improvement. Moreover, faculty find that the technology enhances their own pedagogical skills, resulting in more innovative and personally rewarding classroom experiences.

The College's success in technologizing its Music curriculum can be replicated; by utilizing our research and practical experience, sister institutions can formulate cost-effective hardware acquisition plans and implement curricular changes. Community colleges that make this investment are likely to find themselves in an envious market position by creating a venue for additional technology-based music instruction. BAC, for example, found itself able to offer advanced-level work in music notation that even major regional universities are unable to provide. Additionally, colleges will create opportunities for contractual education that generate fee income from professional musicians and the private sector. Most importantly, their students will enter senior institutions with what is truly a 21st century transfer education.

Tutoring in Cyberspace
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The Writing Center Consultation Project is a collaboration between the University of Arkansas at Little Rock (UALR) and Oak Ridge campus of Roane State Community College (RSCC) in Tennessee. Undergraduate RSCC students e-mail drafts of their essays to graduate students at UALR who then return the drafts through e-mail along with comments. The RSCC and UARL students then meet for a synchronous writing conference at a cyberspace writing center. The faculty of the two institutions have studied the impact this pilot project has had on both the community college students and on the graduate students. Both groups of students said the experience was helpful. The community college students responded by engaging in more revision of their writing. The university students focused on the pedagogical potential and the contrast between traditional writing center and cyberspace writing center conferencing. Clearly, all students involved became more adept with the kind of technology they will be using in their careers. Also, by meeting in cyberspace, community college students and graduate students learn not only about their writing but about working successfully, and with a common goal, with people whose lives are different from theirs. Collaboration between different kinds of institutions means more educational opportunities for all students. One graduate student has completed his master's thesis on the project and entered a doctoral program at Ball State. Another graduate student is currently writing her thesis on the project.

The Wolfson Campus Orientation Program:
"Helping new students to find their way"
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One of the worst experiences for a first-time college student is to start school feeling lost. Many freshmen arrive on campus without knowing how to be advised and register for classes, how to read their schedules and find classrooms, where to find academic departments and faculty members, and simply how to find their way around campus. Student retention studies have revealed that some of the reasons why freshman students drop out their first semester is connected to their lack of knowledge about the basic procedures and policies of their campus. Without knowing what to do, where to go, or who to see, the first-time college student can feel discouraged and frustrated with his/her college experience.

The Department of Orientation is designed to help freshman (and transfer) students make their transition to college smoother. By educating students on procedures such as the admission-registration process, available support services, student

rights and responsibilities, and a telephone directory of all academic and support services departments, "freshman frustration" can be significantly reduced and these students can start school feeling informed about their campus environment.

During orientation sessions, in addition to the manual that outlines all of the important information, a multi-media program is used to highlight other key points and provide a sharper visual image of the information given. This program is also used for students who missed orientation to conduct their own interactive orientation session and as a general information source for prospective and current students to either learn or refresh their knowledge of the basic student related services, policies, and procedures for the campus.

The program begins with upbeat audio played over a warm, fun welcome to the orientation program followed by testimonials of students who, through orientation, felt more comfortable about starting college for the first time. Next, a main menu of various subject matter is provided including: a brief history about the Wolfson Campus, the new student admission through registration process, information on student services, a glossary of academic programs (with a phone directory of academic department chairpersons and deans), student activities and special programs. By clicking on the icon next to each area, the student can access specific information about that subject. Within each subject area are additional options to click for more information on subtopics or to return to the main menu. For example, within the area of academic programs, a list of all majors is provided. If the user clicks onto a major, the chairperson or dean of that department is listed with his/her office room number and telephone extension. If the student needs to know the step-by-step process involved from admission through registration, he/she clicks onto that area (from the main menu) and is given a flow chart of the process. If he/she clicks onto one of the steps, let's say, "Admission", another screen comes up that gives a list of commonly asked questions about the admission process, like "How do I apply for admission?" When the user clicks onto that particular question, a detailed answer of how to apply is provided.

The student can review as much as he/she wishes, and this information can be updated as needed.

SECTION III

PROGRAM AWARD WINNERS

Cooperative Interdisciplinary Communication for Careers
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John Wardell, Professor of Electronics, and Jane Hamilton, Adjunct Instructor of English, have been working together for several years to enhance the technical writing skills of Sauk Valley Community College's A.A.S. electronics graduates. This semester (Spring '96) they are cooperating to offer a section of Technical Reporting (English 111), taught by Hamilton, composed entirely of electronics students who are also enrolled in the electronics course, Technical Problems (EET 256), taught by Wardell. Through this cooperative effort, the students will not only design and build, but also document, a working electronics project.

One of the underlying assumptions in this effort is that the link between technology and workplace writing demands cannot be ignored. Employers increasingly expect incorporation of graphics into text files and computer-generated visual aids for oral presentations, for example. In *Making Students Work-Ready* (1995, p. 30), one business respondent to the Center for Occupational Research and Development's questionnaire stated that successful 21st-century businesses will "need employees who are team-oriented problem solvers, who are articulate, possess functional writing skills, understand human nature, and are fully versed in applied technology." These are exactly the goals addressed by refocusing English 111 for the electronics majors.

The course description of English 111 has not changed. Students in the electronics section receive instruction and practice in oral communication skills and several forms of technical writing, including a book format report. The primary adjustment has been to recast the class setting as a semester-long case study, in which the enrolled students take the role of employees at Sauk Electronic Manufacturing Organization (SEMO).

The employment setting is reinforced by two departures from standard classroom practice:

- Most of the "training sessions" are held in a conference room to help create a corporate setting. Individuals, small groups, or the whole class may also utilize the college's computer or electronics labs during session time.
- A workplace performance appraisal system replaces the academic grading system. At midterm and again at semester's end, students have a face-to-face performance appraisal interview in which they are rated on the following work areas:

quantity of work;
quality of work;
work habits;
personal relations.

At each of these interviews, they receive traditional academic grades, but no other letter grades are given on any of the various written and oral projects they undertake during the course.

The case study description that students receive explains that SEMO has decided to hire recent electronics grads "in order to launch an effort to gain an account from Wardell Electronics, a major supplier of college electronics lab projects."

- John Wardell takes the role of the client so that the projects students undertake in EET 256 become the "product" they produce as SEMO employees.
- Students take roles as members of the "New Products Development Team" after submitting a resume and cover letter answering SEMO's want ad.
- Jane Hamilton takes the role of a SEMO trainer from the human resources department, given supervisory authority over the team during their probationary period with SEMO.

In the course of their electronics studies, EET 256 students have sampled a wide range of computer languages and software applications. This exposure is key to the technology requirements of the case-based course:

- Wardell Electronics requires that the documentation of the electronics kits developed by SEMO be submitted on disk as well as hard copy; in addition, PageMaker format is specified because it's what Wardell Electronics prefers for its graphics management features. SEMO generally uses WordPerfect for its company documents. *This situation creates one of the technology challenges for the SEMO group.*
- Small groups of students become "experts" on team needs, including format, graphics management and PageMaker. They research which specific skills the team as a whole needs, present a group oral presentation, and function as resource for the whole team on that specific area during production of the project documentation.
- As they compare and select their sources for electronics parts, which must include price, students are required to include at least one Internet source for the parts.

As a result of their participation in the combination of the two classes, Sauk Valley Community College A.A.S. electronics graduates will carry away with them a "published," spiral-bound document, demonstrating their ability to communicate their electronics knowledge. They will have experienced problem-solving as part of a team and been faced with the challenges of mastering and using technology as a communication tool. The measure of their success and the success of this approach will lie in the graduates' abilities to get and keep jobs in the electronics field. The approach requires some additional time on the part of both Hamilton and Wardell, but the class is kept small (under 12) by the concurrent enrollment requirement, and both believe the increased applicability of the course worth the extra effort.

Innovations in Technology:
A Computer-Oriented Anatomy and Physiology Course

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At Middlesex Community College ninety percent of those enrolled in Anatomy and Physiology I and II are women. The student clientele are interested in one of the College's Health Career programs such as Diagnostic Medical Sonography, Medical Lab Technology, Nursing and Radiologic Technology. Those seeking careers in the health care field face a diminishing and highly competitive job market. The computerized laboratory experience enables these students to reach the level of mastery they need to succeed in their career oriented courses and thus enhance their own job prospects.

Experience and assessment have indicated that students learn best when they are able to visualize and manipulate information. Middlesex Community College faculty are committed to a student-centered, inquiry-driven approach to develop critical thinking skills. One innovation in the area of curriculum has been MCC's Activated Learning in the Classroom (ALC). An ALC *Course Guide for A & P* has transformed the traditional, lecture-oriented course to one that is student-oriented and highly interactive. The natural sequence to further curriculum improvement was to obtain computer hardware and software. This objective was accomplished in 1995 with the awarding of a matching instrumentation grant from the National Science Foundation. The aim of this program is to dramatically enhance the student learning process by providing a lecture and laboratory experience adapted to learning styles and needs. Curricula have been written that engage the student in hands-on experimentation, in analysis of computer generated data, in collaborative work, and in the manipulation of a multimedia form of the human body. This program has broad applicability to science instruction at community colleges nationwide, where a disproportionately high percentage of students are under prepared for college-level work and struggle with science anxiety and lack of self-confidence.

In designing this program at MCC, D.A. Kolb's (1984) model of student learning has been applied. Aimed at developing the analytical and critical thinking skills, the A & P program involves the presentation of materials at four levels:

1. **Observation** of the characteristics and descriptions (i.e. verbal pictures) of gross and microscopic anatomy;
2. **Examination** of the inter-relationship of structures and functions through integration, comparison, and contrast;
3. **Analysis** of what has been observed and examined, applying the underlying concepts and building systematically to a conclusion;
4. **Application** by organizing a body of knowledge learned and applying this to the study of diseases.

Using Kolb's model as the basic organizing concept, computers have been integrated into the A & P curriculum. Protocols have been written that lead the student through a series of increasingly complicated experiments using the computer. Initial exercises have been written to combine an introduction to the computer with the study of names and positions of the human body. Fifty percent of the students entering this lab are computer illiterate and marvel at their ease of learning and their accomplishment.

Next graphing using a spreadsheet and image analysis allows the student to perform mathematical manipulations from wet-lab data on pH and buffers. The students benefit from the ease of data input and graph forms by spending more time on evaluating concepts and method.

Students are introduced to complex molecular biology principles (cellular transport, protein synthesis, and muscle contraction) through interactive software where they can change parameters and predict results. Computer simulations allow the student to step outside of the classroom and learn in a self-paced environment.

At this stage, when the students are comfortable with their computer literacy and even making PC purchases, they begin dissection and modeling the human body systems using the A.D.A.M. Comprehensive CD-ROM. This is an incredible experience as student pairs navigate through a three-dimensional human body observing structure and system relationships. They take charge of their own learning in an exciting, self-motivating way. While computer dissection does not replace wet-lab dissection, it enhances and cuts learning time in half.

The next phase of the program involves the computer as a recorder using the *MacLab* Interface and BioAmplier. This opens a wider range of learning experiences as the computer becomes a multi-channel recorder generating data that can be stored for later evaluation. The students observe their own EKG's, heart rates, and pulses across the computer screen and interpret time and amplitude by zooming in deflections waves on the screen. The computer has proven to produce clear biological signals as well as offering repeated exposure to the experiment. Student driven inquiry is addressed as they design their own parameters to alter the waves and interpret their experimental results.

The accomplishments of this two semester program have been:

1. Improved basic computer literacy to a group of students that will heavily rely on the computer in their future jobs.
2. Increased science literacy through interactive software that has challenged the students to a more complex level of learning.
3. Simulated a computer-based scientific workplace that involves the input, sharing, and evaluation of information.
4. Emulated problem-solving capabilities and investigative laboratories.
5. Broadened instrument use by interfacing them with computers.
6. Enhanced learning by modeling and dissection with A.D.A.M.

HONORABLE MENTION

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In the Fall of 1986 Mary Ann Dreher, Professor of Nursing at College of DuPage, identified a need to incorporate computers into the nursing program. At that time hospitals were introducing computerized patient records. Students needed to interact with these databases during their clinical experience. The college had no resources available to assist students with this learning.

To meet this learning need, Mary Dreher presented an idea to Linda Caputi, Professor of Nursing. These two teachers, along with the department of instructional design at College of DuPage, developed a computerized patient record system for the personal computer. *TLC General Hospital* is a simplified version of the large hospital systems. The goal of *TLC* was to reduce student anxiety related to computer usage and enhance computer literacy and competency. Students could manipulate patient records as they would in a hospital setting. After using this system, students entered the clinical area with less fear of a computerized patient record system.

Through presentations at conferences Mary and Linda shared *TLC General Hospital* with nursing colleagues at other colleges. The faculty at Monroe Community College in Rochester, New York began using the *TLC* program with their students. They developed additional learning packets called integration plans to be used with the program. With these integration plans students complete critical thinking and problem solving activities using the patient records in the *TLC* system.

The success of the *TLC* program inspired Mary and Linda to use computers in other ways in the nursing program at College of DuPage. This led to the development of their first computer-assisted instruction program *ChartSmart*. Patient documentation was identified as a topic that was difficult for students to learn. Students needed many opportunities to review critical information, practice charting, and test their ability to document accurately throughout the two-year nursing program. *ChartSmart* provided this opportunity. With *ChartSmart* students are guided through tutorials that present initial content. Throughout the tutorials they are able to practice what is learned through many practice activities. The final modules provide patient scenarios for students to chart as they would in a hospital setting. Constant feedback is given so students are able to correct their thinking immediately. A final testbank allows teachers to evaluate the students' learning.

Again, Mary and Linda shared this program with faculty from other colleges. Faculty at Oakton Community College use this program. One teacher shared with the authors that she couldn't see teaching charting any other way; *ChartSmart* provides a total teaching package.

With the success of *TLC General Hospital* and *ChartSmart*, Mary, Linda, and the office of instructional design were encouraged to find other uses for computer-

assisted instruction in the nursing program. It didn't take long to identify content that would be applicable to computer technology.

The next project planned involved physiology. It is important for nursing students to understand normal physiology in order to grasp concepts such as pathophysiology, drug therapies, and nursing interventions. Nursing students must be able to apply physiology to nursing theory. To meet this learning need a series of programs entitled *The PhysWhiz* was conceived.

The PhysWhiz helps nursing students understand the complex physiological processes of the major body systems. To date there are four systems completed. These systems are: cardiac, gastrointestinal, endocrine, and immune. Two more are currently being developed, renal and respiratory. These software programs are designed to allow maximum flexibility for learners. A sequence of screens is presented to all learners. From this basic layout, users may choose various learning options, such as thinking questions, nursing implications, or examples of pathophysiology. Extensive use of graphics and animation facilitates student understanding of the concepts presented. Students can immediately apply their learning to patient situations using the clinical application module included with each program. The programs include a testbank that teachers can use to measure student learning.

The developers also shared this series of programs with colleagues from other schools. Faculty at South Suburban College in South Holland, Illinois use *The PhysWhiz* not only as an adjunct to learning outside the classroom, but as an in-class presentation tool. Students highly evaluate their classroom presentations using *The PhysWhiz*. One faculty at South Suburban shared her experiences. She stated that she first taught the immune system in a traditional lecture format. The following year she used *The PhysWhiz*. One student who was repeating the class asked her why she hadn't used the program the previous year since it made the lecture more interesting and easier to understand. The students in her class have the option to review the program in the computer lab once the lecture is over. Although this is an optional assignment, she reports all students in the class choose to review the software program.

Another experience of the faculty at South Suburban College using the *PhysWhiz* program involved a student with a learning disability. Initially this student failed the nursing course covering the immune system. The following year the student returned and experienced the lecture using *The PhysWhiz*. The student was able to review this program as often as desired after the lecture. The student earned a "B" on the immune test. Although this is not strict research data, the faculty attributed this student's success with the new format for delivering this lecture with the opportunity to review the program in the computer lab. Because of the success with *The PhysWhiz: The Immune System*, other faculty are using additional *PhysWhiz* programs in their classrooms.

The development of computer programs is not a simple task. Mary Dreher and Linda Caputi work closely with the office of instructional design at College of DuPage to make their software ideas a reality. Technology has now become an integral part of the nursing program.

Anatomy & Physiology for Allied Health Students

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In the current educational restructure of higher education, it is appropriate for laboratory methods to evolve. Students in today's classrooms are visual learners and members of the video generation. Their expectations are that learning must be exciting and interesting, as well as, informative.

Five years ago at Burlington County College, the task of producing an Anatomy and Physiology course with a new outlook on its laboratory sequence was undertaken. The target course was Anatomy and Physiology for the Allied Health students. The analysis began by assessing the value of the current practices. This assessment included an investigation of cost, performance, and effectiveness of learning outcomes. The student population in the Allied Health and related fields had grown and with this growth came a variety of problems for the Anatomy group. The laboratory experiments centered around dissection of the cat. The number of cats required to teach the huge number of students became prohibitively expensive. Replacing the cats with fetal pigs did not seem to provide a solution either. The pigs were lacking in terms of structure and detail. In addition, the dissection specimens were expensive, disposable items that were distasteful to many students.

The next step in the analysis involved examining the available alternative teaching tools. One such tool was laser disc technology. The appropriate equipment and discs targeting human anatomy were purchased. The technology was then incorporated into the laboratory. The students viewed some events that they would not otherwise be able to see; for example, an actual cardiac angioplasty procedure.

The next expenditure was the purchase of computers with multimedia capability and appropriate software that was both in depth and also user friendly. After careful consideration, an investment was made in a computer program with would serve as the students' human dissection. The primary focus of our computerized dissection was A.D.A.M. (Animated Dissection for Anatomy and Medicine) which presents the human body in a detailed, layered, peel away format. This provides an excellent view of gross anatomy. The students can dissect and visualize the parts within the context of the whole body. In addition to A.D.A.M., an investment was made in a series of tutorial programs which relate to each organ system. These tutorials provide the student with an excellent opportunity to study the organ systems and their components at their own pace. Several more programs were added that have the capability to perform physiology studies using a computer interface. The students may perform these experiments on themselves as opposed to animal experimentation. A number of human plastic models, that are realistically detailed, were added to enhance three-dimensional quality.

The final revisions included greater emphasis in histology and the human body. A Histology Study Guide was developed to provide a description of each microscopic slide viewed in the course. The students sketch each slide in their study guide as they are observed. Before testing, the book serves to refresh memories. At the end of this reorganization of the Anatomy laboratory, a well organized plan for each week's exercise was written. At each meeting, the students perform both computer and "wet" lab activities. Each laboratory session is filled with a variety of activities which stimulate and educate.

In order to validate the revisions, a diagnostic instrument was prepared to measure student attitude toward the innovations. Approximately 90 percent of those polled agreed that the computer assisted instruction greatly enhanced their understanding of the subject matter. The lab practical scores of those enrolled in the course prior to the changes were compared to those who studied under the new methods. The comparison demonstrated that students who studied the information via the revised program, using computer assisted instruction, scored an average of ten points higher on the practical exams. This represents a significant increase over previous students in the traditional laboratory experience.

Many of the computer software programs have authoring capabilities that can provide for a course unique to our institution's specific needs. The positive feedback has encouraged additional fine-tuning of the Anatomy and Physiology program. By applying electronic tools, current students are able to learn human anatomy more realistically than those using traditional dissection methods. There have been significant reductions in course costs and environmental wastes, as well. The structure of the human body has remained the same, but state-of-the-art technology can be a valuable teaching tool.

Associate Degree Nursing
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Lexington Community College has, for many years, worked on improving student retention. The nursing classes are chosen by a selective admission process based on G.P.A. and ACT or NLN Pre-Admission Test scores. The average age of a typical class is 26 and their backgrounds are very diverse. Most students have prior college experience and some have college degrees.

Faculty recognized that students learn in different ways and felt that the more learning options that are available to promote learning the better the chance of a student's success. The College applied for and received an Helene Fuld Grant in 1989 and 1993. Grant monies were used to purchase computer hardware and software to take advantage of available materials to supplement and reinforce learning. Since the initial purchases, the program faculty have been committed to continued purchase of software that is up to date and supportive of program objectives. All nursing faculty are actively involved in the decision making process of what to purchase and how it will be used.

Students are expected to spend approximately one hour a week in the Media Lab with an assignment that correlates with what is going on in the classroom. Initially attendance was monitored and the time was considered part of the clinical experience. This caused some student and faculty resentments. Because students work at different speeds some took less than an hour and had to stay and some took more than an hour. Faculty were resentful of having to act as monitors and felt students should be treated as adults. Now there is a weekly assignment added to other course expectations. Students can take as much or as little time as they need. Faculty are finding that not only is everyone happier, but students are spending more time in the Media Lab and stating that they are finding it more valuable.

Because of the success of the Media Lab, there are plans to require additional software programs in the curriculum. Initially, because of a lack of computers students had to work in groups of two or three. With the second grant and the purchase of additional computers each student can now work at his or her own speed. Because of the success of the Media Lab, there are plans to incorporate additional software into the curriculum

Interactive computer programs have also been used as another means of stimulating learning for a diverse student population. With the assistance of an LCD panel, acquired through the grant, an interactive program can be projected onto a movie screen so several students can take an active part in a program without having to crowd around a small computer screen. The LCD panel and a video camera are also used when faculty are demonstrating skills. This allows all students to see small details in the demonstration without being up next to the demonstration. Faculty are in the process of videotaping required skills so the tapes will be available for students to see again, if there is need.

The use of technology has been of benefit to the Nursing students. They express satisfaction with the programs and find programs beneficial. The faculty are finding the students returning to the lab on their own to review a previous program or view something that they find on the menu. It helps them to have a concept expressed in different ways: in the classroom and on the computer program. The use of computers and computer software gives the faculty flexibility in planning how objectives will be met in the nursing courses.

Retention rates have increased at LCC in the last two years. The Media Lab has been a success. Students are making positive comments about how helpful a program was or that a program was fun. They are spending more time in the lab on their own. Faculty are constantly previewing new programs and sharing them with each expectation on the part of students that computer assisted instruction is part of the program and another way of learning.

The Clinical Simulated Hospital Model

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Trident Technical College is constantly seeking innovative and creative ways to improve the quality of its educational programs.

One of the most recent efforts involved the challenge of responding to the rapid increase in the use of information technology in the health care field. Accordingly, the Associate Dean of Academic Computing in the Health Sciences Division collaborated with the Institute for Information Management and Department of Computer and Information Systems at Robert Morris College in Pennsylvania to investigate the feasibility of using Department of Veterans Affairs (VA) and Indian Health Services (IHS) software to develop instructor-controlled, patient information system software that could be used as a major instructional component for training Allied Health and Nursing students. This collaboration produced the "Instructional Patient Database and Clinical Information System Project." The project began in 1990, and the first demonstration system became operational in 1992.

At Trident, the project is called "The Clinical Simulated Hospital Model." It is designed to provide students in Allied Health and Nursing Programs access to relevant, realistic clinical information as a basis for conducting patient assessment, developing care plans, and to develop critical thinking and decision-making skills.

The model involves the use of repurposed, public-domain, clinical information system software (V.A. and Indian Health Service) to which a computer-based instructional component has been added, thus providing four major innovative outcomes:

1. Students will be better prepared to use computer-based information systems that are increasingly being used in the health delivery system.
2. Faculty will be able to teach course content and assess student performance more efficiently and effectively.
3. Use of the model will lead to cost savings and to efficiencies in health care by making educational access to clinical data affordable on a broad scale.
4. The model is adaptable for use by other colleges.

The model is currently being used in Trident's Nursing, Medical Laboratory Technology, Radiologic Technology, Medical Assisting, and Dental Services Programs. Ultimately, all of the Nursing and Allied Health Programs will be involved in the use of the model.

A unique feature of the model is that it permits students from a variety of disciplines to collaborate in patient assessment and development of care strategies as members of a health care team.

Computer-Aided Drafting & Design
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Drafters and designers provide support to engineers, architects, and other design professionals in the development of plans and specifications for manufactured products and structures to be constructed. Drafting is "The Language of Technology" since virtually everything which is manufactured or constructed requires plans and technical drawings to execute the design concept.

Traditional precision manual drawing techniques have been largely supplanted by the use of computers using CADD software. Increasing use is being made of solid modeling and computer based analysis tools to refine and optimize designs.

The Essex Community College Computer Aided Drafting and Design (CADD) Program provides students with the technical skills and design knowledge to enter today's computer based work force as computer aided drafters/designers. The program has multiple entry points to permit current drafter/designers to upgrade their skills. Emphasis is on the development and application of basic drafting/design principles in a computer based environment. All courses develop an appreciation for design parameters in mechanical applications.

The Associate of Applied Science (A.A.S.) degree in CADD, a CADD Certificate and a Letter of Recognition option are offered.

The CADD Program was established in 1985 and currently has an average of 95 students per semester. Despite its relatively small size, the program has a high completion rate, with an average of 14 graduates per year.

The best measure of success of the program has been students getting jobs. During the past three years, 27 students have been directly placed in positions. Of the 18 students currently taking upper level/second year courses, 12 already have jobs as drafters or in related fields. Local employers have come to look at the Essex Community College CADD Program as a primary source of new drafters.

There are a number of reasons for the success of the program. One is the close contact that is maintained with local business and industries. These contacts include regular guidance by an advisory committee, plant visits by faculty and students, and personal interaction by the program coordinator with business and industry.

Second is the use of adjunct faculty with current experience in the field to supplement the single full time faculty member. This provides students with

direct exposure to how things are done in the "real world" to complement their formal school work.

Third is the continual effort to regularly upgrade CADD computer assets to reflect advances made in commercial activities. This makes it possible for students to learn on the same environment that they will have in the work place.

Fourth is the structure of the program which offers multiple entry and exit points. Students with experience are immediately slotted into the appropriate upper level course. This also accommodates students who need only a limited number of courses to meet their professional skill level needs.

Fifth, the program has been designed to appeal to a wide range of students. A measure of the diversity of our students is that 32 percent of the graduates in the past three years have been women. This is particularly significant given that the drafting field is considered as "non-traditional" for women.

The program offers opportunities for cooperative education experiences and for independent study. These courses provide an excellent opportunity for students to work on projects of benefit to them and to the community. Among projects completed in recent semesters have been designs for: an orthopedic "bone stretching" device, a meter for measuring blood coagulation time, wheelchair lift devices for van access, and residential housing plans. All these projects have put students in realistic design situations, while honing their technical skills.

The Essex Community College CADD Program provides a model for other community colleges to follow. Its relatively small size provides students with a feeling of intimacy and allows for substantial personal contact with instructors and the program coordinator. Its emphasis on both technical CADD skills and on the design aspects of the profession produces graduates who have a broad base of knowledge allowing them to be effective across a range of employment opportunities. Curriculum and course materials will be made available to interested community colleges.

Court and Conference Reporting
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The Court and Conference Reporting Program has been in existence at the Meramec campus since 1970. Through the years the program has grown in numbers and approximately 300 students are new enrolled. In January of 1994, the National Court Reporters Association granted the college their approval as one of 108 approved court reporting schools throughout the United States. Meramec has the only approved school in the State of Missouri. Graduates may either pursue an Associate Degree or receive our Certificate.

In 1992, Southwestern Bell Foundation awarded the college a grant that enabled the purchase of the necessary technology that would be used to teach students to be able to provide instantaneous translation of their shorthand notes. All of the students from the very beginning machine shorthand classes are now connected from their shorthand machine to a computer through the use of a cable. The students are able to write from their shorthand machine, translate their steno notes from steno into English through the computer, and then provide instantaneous translation of those notes which may be used either in the courtroom as they work as a court reporter for a judge; or in a freelance deposition where the reporter is working as an independent contractor; or in the classroom for a young child who may be deaf and cannot hear the teacher's lecture; or at a seminar where a participant for the seminar who is deaf cannot hear the speaker's presentation; and also for television broadcasting where the reporter provides the closed captions for the deaf community.

All court reporting students use this technology in all of their coursework. This technology has been used in a cooperative effort with students in the Access Program, which is the program for students with disabilities. To provide court reporting students with as much practical experience as possible while still in school, court reporting students are assigned to write a class for a student with a disability, and they write the class for the entire semester. This student will sit side-by-side with the court reporting student, and as the teacher is lecturing, the court reporting student is writing the teacher's lecture, and it is translating instantaneously onto the computer screen which sits in front of the student. The student is also given a hard copy of the lecture notes to review for the next day's class. If the teacher would like a copy of the lecture notes, the court reporting student can do this as well.

The students assisted from the Access Program over these years have been very successful in their coursework. Court reporting students gain from this experience, as well as they are perfecting their own realtime writing skills while still in school. Meramec was the first community college in the United States to teach students how to realtime their shorthand notes for its own nucleus of students with disabilities. In fact, through these past few years, Meramec has been able to help numerous other colleges start similar programs and have been visited by the two leading deaf schools in the United States, Gallaudet University and Rochester Institute of Technology.

Culinary Technology
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For twenty-seven years, the Culinary Technology Program at Asheville-Buncombe Technical Community College has been an educational resource and skills development platform for a wide cross section of students interested in pursuing careers in the culinary discipline. Culminating in a two-year Associate of Applied Science degree, the program stresses a need for understanding and responding to

today's market demands by emphasizing the skills valued by the profession--through the use of technologically current equipment and processes blended with cutting-edge developments in preparation techniques and food service management. The current relevancy approach to curriculum planning and dissemination distinguishes A-B Tech from other culinary departments. This is evidenced by the fact that upon graduation, 100 percent of A-B Tech's students have achieved employment in the culinary field.

In order to stay current with the rapidly occurring changes in the culinary field and to prepare industry-ready graduates, the Culinary Technology Program at A-B Tech maintains "real world" links to the culinary community through:

1. A strong partnership with the American Culinary Federation (ACF), utilizing required occupation-specific knowledge and skills. These competencies are documented by the U.S. Bureau of Labor. The ACF determines the standards for today's culinary industry and is the resource facilitating the exchange of information, ideas, research, products, and services related to food and the food service industry. Local and regional culinary competitions, which provide students with the occasion to test their skills vis-a-vis peers from other programs, allowing the students to obtain constructive feedback from the key culinary influences in the country, gaining state-of-the-art knowledge while developing prized locations for internships and graduate placement.
A successful and diverse faculty with practical in-field experience effective in integrating classroom instruction with work-based learning and identifying and assessing performance benchmarks. The addition of adjunct faculty concentrates rather than dilutes the "real world" business approach in this career-oriented program.

2. Supervised work practicum, a degree requirement reinforcing academic and technical lessons, affording students the opportunity to refine career-oriented skills under the tutelage of working chefs noted for their successful management styles and innovative approach to food preparation and food service management. An Advisory Committee of recognized industry leaders providing regular examination and validation of curriculum content--a crucial communication process to exchange cutting-edge information and ideas among educators and industry practitioners.

3. Membership and participation in auxiliary professional career groups, including the Counsel of Hotel, Restaurant and Industrial Educators, North Carolina Restaurant Association, International Food Service Executives, and Professional Chefs of North Carolina.

4. Student advising and exit interviews empowering students with a "constructive criticism" license, providing them with an opportunity to give input to both personnel and curriculum issues.

Major reforms have been achieved in the program in response to input from industry. These include:

- The premier measure of the program's value is the multitude of referrals within the industry, both in seeking students for internships and for employment upon graduation.

- One hundred percent of the graduates are placed in culinary employment and the majority of program graduates over the last five years remain actively employed in the culinary field.
- All graduates have passed the National Restaurant Association's standardized certification exams.
- Graduates have attained noted positions in the culinary field, with one student achieving membership on the prestigious National Culinary Olympic team.

Program enrollment continues to grow at a rapid rate (up 26 percent over the last five years), necessitating the addition of evening sessions. There has been marked decline in attrition.

Students continue to achieve honors in culinary competitions at an increasing rate, winning gold medals in competition in the Charlotte Food Show in 1994, the North Carolina Junior Hot Food Competition in 1994, 1995, and 1996, and medals in the Southeastern Hot Food Competition in 1995 and 1996. In December 1995, a group of students was invited to travel to Washington to display its edible Christmas ornaments on Christmas trees in the White House.

For the last two years, the Culinary Program has won a Top 5 position in the Learning Resource Center's award for the highest per student circulation rate. This active use of the library supports the students' knowledge base.

The Chairperson of the Culinary Program was selected as the 1995 Teacher of the Year for the North Carolina Community College System.

A-B Tech's Culinary Program is constantly "benchmarked" by other educational institutions in North and South Carolina. The curriculum supports the classroom education portion of the American Culinary Foundation's apprenticeship program.

Customs Brokers License Preparation Program
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It is the mission and educational objective of EPCC at the Northwest Center to meet the guidelines of (EDA) in providing vocational/occupational and educational programs for better employment opportunities as well as work force training for special populations in the under-served areas of the upper valley.

According to the City Planning Department, the Upper Valley area will be the focus of major industrial development over the next decade. With the signing of NAFTA, El Paso will play an even more critical role in the region's economic development and growth. The Customs Brokers Preparation Program was

developed in response to this critical need and to provide our very diversified population new career opportunities taking full advantage of NAFTA.

Commercial exportations from El Paso to Mexico account for approximately 32 percent of all business transactions. This percentage can be substantially increased with NAFTA training and a better understanding and knowledge of NAFTA. The Six-Month U.S. Customs Broker Program is designed for individuals pursuing careers in international trade brokerage, and import/export transaction handling. The program emphasizes basic U.S. Customs skills to prepare students to successfully complete the program and pass the U.S. Customs Broker License Exam.

The Office of the Commissioner of Customs, under the jurisdiction of the Treasury Department, accepts applications to obtain a U.S. Customs Broker License twice a year. Tests are given in April and October of each year with applications being submitted three months before each test month. The exam is a time-limited test (usually three hours.) It is considered a difficult and challenging exam.

Currently there are only fifteen licensed Customs Brokers in El Paso. Every International trade transaction must be handled by a customs broker. Also currently, there are no other educational institutions in this region offering courses to prepare students for the test. This program can help students prepare for the test by reviewing the U.S. Customs Law of 1930 as amended, plus the Harmonized Tariff System.

It is anticipated that over a one year period of time multi-discipline courses can be offered that will fully prepare students to successfully compete for a U.S. Customs Broker License. Course work plus on-the-job training will be a good prescription for success.

It is anticipated that it will take NAFTA approximately 15 years to be fully implemented. Regardless of full implementation, there are NAFTA issues and changes constantly occurring that this program addresses to stay current using state-of-the-art technology for loading and updating information.

There is an immediate need to provide the prerequisite NAFTA training that will result in the accomplishment of immediate new job opportunities. This program also represents a new opportunity to all border colleges taking advantage of NAFTA to meet the new needs for a diverse student population in that area if adapted.

Objectives include:

a. To prepare students not only in the fundamentals of Customs procedures, but to teach and instruct them in all facets of Rules and Regulations plus the Harmonized System and NAFTA, and fully prepare them for future endeavors in this field using state-of-the-art facilities, technology, and equipment.

b. To instill in the students the importance of International Trade. In this day and age it is no longer the coming "thing." It is here NOW. Economic isolation is no longer a luxury we can afford. Whether we want to or not, we now have to compete in the global market, so our

job is to provide expert individuals capable of assuming the responsibility of performing this task.

c. To pass the "torch" to future entrepreneurs fully prepared to fill the vacuum that existed and thus become the vanguard for future generations.

The goal is to reach out to this diverse population and to find interested individuals willing to work and study to broaden their horizons in this diverse competitive field; instruct them thoroughly in all facets of Customs procedures and thus become the catalyst in this field.

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Students who are enrolled in the Electromechanical Program receive a two-year associate degree upon completion of 69 credits. Twenty-one of these credits are general education courses that cover communication skills, social sciences, and mathematics competencies required for the core material. Approximately 60 percent of the core courses are pure electronics, 20 percent are mechanical and fluid power, and the remaining 20 percent combine the competencies of the individual courses previously taken into electromechanical systems applications.

The method of instruction used to train students is individualized instruction. Instead of providing the course work through traditional lectures and laboratory sessions, all of the material is formatted into self-study modules or units. Each unit provides information on a significant competency, component, circuit or mechanism in the electromechanical field. There are 19 different courses in the program. Each course represents a major topic area in the electronic or mechanical fields of technology. There are several units in each course.

The electromechanical classroom is a facility which consists of laboratory equipment that provides numerous hands-on activities. Two adjacent rooms are used for a quiet study area, and for viewing audio/video learning supplementary material. During the operation at least one instructor is present in the classroom facility. Classes are scheduled during the regular school year and during the summer.

Students are enrolled in courses throughout the program. New students enter the program when a new session begins. The number of students who enter is determined by how many openings are created during the previous session. For example, if four students graduate and two students withdraw or fail during a semester session, openings for six new people are created. The replacement

students start the program when the next session begins. A fourth section of the program is in operation at a branch campus from 9:30 a.m. to 3:30 p.m.

Students are required to attend a minimum number of hours per week, depending on the number of enrolled credits they have selected. Attendance on a specific day, at a specific time is not required. The student decides when to attend. To determine if the students have acquired the desired competencies as they progress through the program, examinations are given for each unit. Also, a log sheet is used to record that all experiment activities have successfully been completed. The function of the instructor is to be a resource person and to monitor the progress of students using the examinations and laboratory activities.

There are several advantages of the individualized instruction format:

1. It offers flexibility. A student can attend classes when convenient, and will not be penalized by falling behind for missing a class day. This feature is appealing to those students who have family obligations, or are periodically required to work overtime. Extra hours of attendance at a later day can enable the student to recuperate the lost classroom time.
2. It is less expensive to operate than a traditional laboratory facility. For example, suppose that one course requires a very expensive training unit. A fewer number of trainers are required since everyone isn't enrolled simultaneously in that one course.
3. It develops problem solving skills. Since the courses are packaged, the student must become self-reliant and less dependent on formal instruction to learn the material.
4. Each course is always offered during every session. It is never canceled because of low enrollment numbers.
5. Students graduate four times a year instead of at the end of the spring semester. Therefore, they aren't competing for jobs with graduates from other schools at that time. Therefore, the placement record for the program is excellent.

Approximately half of the electromechanical student customers are attending school on a part-time status. Most of these students are employed full-time. The primary reason for attending school is to upgrade their knowledge and skills for a better job in the future. Many graduates receive promotions at the company where they are employed while they are progressing through the program, or when they finish.

The flexibility enables students who work end or 3rd shift to attend school during the day. Students who work first shift attend school during section C. Students who are shift workers can continue school by attending different sections if their work schedule changes periodically from one shift to another.

Presently, the electromechanical program has an ongoing partnership with several major manufacturers located within the school district. On Thursday and Friday, nine students from a local paper company attend classes from 10:00 a.m. to 3:30 p.m. On various days throughout the week, 27 employees from a welding/robotics manufacturer attend classes. The purpose of the arrangement is to provide training for technical related jobs in the company. Some of these

individuals are enrolled in program courses and receive credit towards an associate degree. Other individuals complete selected units that relate to the types of competencies required at their company. These students are awarded a certificate. Two students are enrolled in a cooperative program with companies where they simultaneously receive college credit and related work experience. For most students, the co-op position becomes a full-time position. On occasion, the staff members have also provided customized training tailored for businesses and industries at the job site.

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Corporate trends toward consolidation, downsizing, computerization, and work-force reductions are creating a new type of student population -- middle-aged, educated, under-employed, and unemployed. Furthermore, as corporate in-house training decreases, acquiring the training necessary to keep abreast of current technology has become the employee's responsibility.

The Geoscience Technology Training Center, a one-of-a-kind facility located at North Harris College, consists of a dynamic and interactive alliance between the college, business community, and student population to provide advanced, publicly accessible, and cost effective INIX-based workstation training and cross-professional employment transition skills to individuals seeking employment or improving current employment skills. Since its inception in 1992 the goals of the Geoscience Technology Training Center have been:

- To provide advanced, publicly accessible and cost effective UNIX-based interactive workstation and PC-bases training through college credit and community education courses designed to cover a wide range of industrial needs.
- To provide continued access to hardware and software to former students in order to prevent the loss of newly acquired technical skills.
- To maintain a dynamic partnership between the business community and the college in order to improve technical training and the transfer of new technology.
- To provide new and/or improved professional skills and employment transition skills in all areas of UNIX workstation integration and to expand these skills in a DOS workstation environment where applicable.
- To expand and modify course offerings based upon improved workstation technology and the evolving needs of the community.
- To provide a proving ground to new software development and technology in "open systems" network environment.

In the fall of 1992 the GTTC opened its doors with one course. The facility now offers 20 different UNIX workstations and PC courses, and has trained over 600 individuals. The average student is a professional in his or her upper 40's. Educational levels range from Bachelor's, Master's to Ph.D. degrees.

Through Community Education, the GTTC offers affordable technical and career transition training for individuals displaced by the continued downsizing of the petroleum industry as well as other industries. Some students in transition are assisted by out placement programs or by the Texas Employment Commission.

The GTTC also provides training for individuals who require UNIX-based workstation training in order to obtain improved, or permanent, positions within corporations. In addition, the Geoscience Technology Training Center provides a cross-professional series of courses designed to increase general UNIX-based workstation skills which are applicable throughout a broad spectrum of industries, including city-regional planning, medical, environmental, real estate, and service industries.

A second population is served through academic education. The Geoscience Technology Training Center offers an extended UNIX-based geoscience course which includes approximately 100 hours of hands-on workstation geophysical interpretation and software manipulation, employing such industry standard leading edge tools as Landmark Graphics and GeoQuest geophysical interpretation software.

Industrial sponsorship of the GTTC has been phenomenal. Sponsor corporations include: IBM, Hewlett-Packard, Oracle Corporation, OYA Geospace, Jason Geosystems, Caris, Union Texas Petroleum, Landmark Graphics Corporation, GeoQuest Systems Incorporated, Photon-CogniSeis Development, GeoCenter, Energy Graphics, GX Technology, Neuralog, Hampson Russell, Columbia Gas, Earth Resources Mapper, Environmental Systems Research Institute, and the Houston Endowment.

This corporate sponsorship has enabled the Geoscience Technology Training Center to grow into a facility which supports over $7,000,000 of software and hardware obtained through donations, grants, and through North Harris College, the GTTC makes this corporate technology available to individuals normally unable to afford it or who do not have immediate access. The GTTC also provides a "real world" test site for new versions of software and equipment in an open-systems environment which further increases industrial involvement with the college.

Industry also participates by providing a resource pool of course instructors used in the Community Education courses taught through the GTTC, or as in the case of the Houston Advanced Research Center (HARC), Earth Resources Mapped (ERMapper), and Hampson-Russell, by forming education/industrial training alliances.

Graphic Arts
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The Mission College Graphic Arts Department has a unique program that offers graphic arts instruction on topics from idea generation through bindery, with a special emphasis in electronic prepress. In 1993, the program was selected by the Aldus Corporation as a partner in education and was given 20 copies of Aldus Press-Wise software. This partnership, one of two in the country with the other college being Rochester Institute of Technology in Rochester, NY, allows Mission to offer instruction in electronic imposition and pagination. There are few community colleges nation-wide that offer this type of comprehensive graphic arts curriculum.

Because the College is located in the heart of Silicon Valley, the department faculty have developed a hardworking advisory council with representatives from many of the local graphic arts and computer industries. The advisory council membership includes representatives from Hewlett-Packard, Apple Computer, Western Publications, and Sytex Corporation to name a few.

Mission's graphic arts program currently has over 350 students enrolled and often has long waiting lists of students wanting to enter the program. The department has increased its enrollment by 15 percent each year for the past three school years. The department offers courses in: Introduction to Graphic Arts: An Industry Overview; Introduction to Desktop Publishing (PageMaker and QuarkXpress); Graphic Arts Illustration: Adobe Illustrator; Digital Imaging; Photoshop; Desktop Color Separation; Electronic Pre-Press; Offset Press; Advanced Photoshop; Advanced Desktop Publishing; Graphic Arts Photography and Image Assembly. The program has acquired five offset presses including a Heidelberg GTO and an AB Dick T-head two color press. It houses a full darkroom with two horizontal and one fully electronic vertical camera. Students have full use of a 60 station Macintosh lab, 30 of which are Power PC level computers, and a 30 station Pentium lab. Faculty teach the digital courses so that students can use the Macintosh or the DOS platform to complete the assignments.

The program uses a five pronged approach to education: (1) classroom lecture and demonstration; (2) hands-on projects that apply skills demonstrated in class and described in the textbook; (3) reading assignments from the textbook and from articles related to the current lesson; (4) projects that require students to work in teams, e.g., develop a biographical booklet on the students in the class; and (5) projects that require students to work closely with local businesses and non-profit agencies. For the past seven years students of the department have designed, proofed, printed and done the bindery on the posters, program, tickets and flyers for "Parents Helping Parents", a nationally recognized local non-profit agency that is a support group for parents of severely disabled children.

In addition, the department has established a very successful internship program where students are placed on the job and are compensated either by salary or

college credit. Students have been placed in internships at Keedie Imaging Systems, The House of Printing, Campbell Graphics, and Mission College Instructional Design Services to name a few. In addition to internships, there have been over 30 students placed into employment over the past three years, fourteen of whom were placed in the 1993-1994 school year. Many local graphic arts companies recognize the strong program that Mission College has developed and have enrolled their employees in the program to update their skills.

Invest Learning Lab
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Over the past several years, Santa Fe Community College has focused its efforts on building a technology-based curriculum that meets student needs and that also enables the college to serve occupational students, using instructional technology as a teaching tool.

In the Invest Learning Lab we prepare occupational students who need remedial work for college level courses by offering self-paced, computer-assisted instruction for developmental math courses, and supplemental custom curriculum for applied English and reading classes. The lab has also proven to be indispensable in Adult Basic Education, GED, English as a Second Language classes, and other literacy programs. Similarly, the Flex Lab has become a center for the development of self-paced computer-assisted instruction for college credit courses in various occupational areas, ranging from Medical Terminology to Business Computing and Office Information Systems, Environmental Science and Accounting. Students in all courses can enroll at any time year-round, can work at their own pace, and come into the lab at times and days convenient for them.

The lab is minimally staffed with only one full-time faculty member and a few learning technicians who assist students with their work as necessary. Students can do course work at home, at work, in any computer lab, or in the Flex Lab.

Both the Invest Learning Lab and the Flex Lab enable students to learn from computers, with minimal assistance from faculty members. This saves the college valuable resources that can then be redirected to programs which relay on faculty presence.

The following are documentable measures of success of this innovative program:

These courses were formerly offered in a traditional format, by one full-time instructor:

Keyboarding (2 sections)
Intro to Word Processing (3 sections)
Desktop Publishing with Word Perfect (1 section)
Document Production (1 section)

These same courses, plus approximately 10 more, with higher enrollment limits, are now offered in the Flex Lab by one full-time instructor and a few part-time instructor assistants. The cost savings is approximately $4,000 per semester, or $10,000 per year based on savings on part-time instructor contracts.

The Invest Learning Lab allows the college to help a higher volume of students without having to hire additional tutors. The lab currently accommodates over 200 hours of student use per week; this time would normally have to be paid for at a rate of $6 per hour.

SFCC's Invest Learning Lab is a demonstration site and is a model program for the development of new and innovative instructional programs. The Flex Lab has been featured in ERIC as an innovative learning alternative for students.

Laboratory Facilitation Center for the Biological Sciences
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The increased demand for a wide diversity of allied health science workers has continued to grow each year. This demand has caused a rapid growth in the enrollment of science courses at Jefferson College. As a result of this growth, the increased complexity of course content, and the variety in learning needs of students (many of whom have gaps in their previous academic preparation), we determined that traditional laboratories could no longer provide students with the quality laboratory experiences necessary to support these challenging and constantly changing fields.

In the spring of 1994, when funding became available through a special state allocation for Work Force Improvement, the biology faculty launched an extensive research and development campaign to explore the latest available technology. After several months, we concluded that we could design and deliver a state-of-the-art facility that would solve space problems and simultaneously provide students with a laboratory experience far superior to that of traditional labs. We endeavored to produce a facilitation center that would provide a quality learning experience in a non-threatening yet intellectually challenging atmosphere and through technological innovation provide for effective utilization of student/faculty efforts.

Following eighteen months of exhaustive research and development the Laboratory Facilitation Center for Biological Sciences was open and fully operational for the fall 1995 classes. The goal had been to design a laboratory so the students with tutorial support could conduct any of the required exercises for the semester and do so in a self-paced manner. The Center, a state-of-the-art facility, is open from 9 a.m. until 4 p.m. daily, allowing students to use the facility when it is most convenient for them. The design permits as many as 40 students to conduct any exercise at any given time. Laboratory teachers or tutors trained

in the use of software are always present to provide encouragement, assistance, and a balance between technical and human support.

The Center consists of six multimedia stations, each capable of serving a number of students simultaneously. Orientation and configuration of furniture, floor space, and equipment are slightly varied at each station, thereby providing more effective use of the Center. Typically, each station is equipped with from two to six IBM-compatible PCs, a Telex telephone system, a printer, a 13" color tv/vcr, and an explorer microcomputer-based laboratory (MBL) unit which interfaces with the computer. The MBL unit allows students to run actual experiments and to enter the data through probes into the computer. (Probes are electrodes which can be attached to various parts of the body or can be placed in the environment. They are capable of measuring minute changes associated with parameters such as temperature, pressure, or electrical activity.) Each computer is equipped with one gigabyte of memory and a quad-speed CD-ROM to run today's most sophisticated programs. In addition to a laboratory manual specifically designed for each course, the Center has a software library, a video tutorial library, traditional biological equipment, physiological monitoring devices, and specimens such as cadaver bones and plastinated human organs as well as a complete series of videos developed by our faculty for the purpose of providing additional explanation.

Whenever possible, actual "hands-on" activities are employed which feature biological specimens or living subjects. For instance, physiological data associated with breathing, electrocardiograms, or electroencephalograms are collected with the MBL probes. The LOGAL software system which couples with the MBL probes allows students to perform actual experiments. The LOGAL software is much more powerful than software packages allowing only programmed simulations. Data collected by students from their own bodies is then recorded and analyzed by the PC. Anatomical studies of specimens such as plastinated human organs or cadaver bones are supported with software programs such as A.D.A.M. and BODYWORKS. These programs can instantly assist the student in finding, for example, a particular anatomical structure through "mapping" or "indexing." The proper pronunciation of the term can be heard on the multimedia speaker system and the image can be enlarged or rotated on the computer screen. Biochemical results obtained in the microbiology laboratory allow students to accurately identify isolates of microorganisms after the data has first been identified by our computer's BIOLOG software program. Numerous tutorial CD-ROM programs such as MICROBES IN MOTION and special computer programs customized and developed by faculty are available to assist students with both lecture and laboratory topics.

The labs for courses in biology, botany, microbiology, anatomy, and physiology are currently scheduled in the Center. These classes predominately support occupational students--more specifically, students in the allied health fields of ADN nursing, LPN nursing, veterinary technology, dental assistance, medical technology, and radiology. We also have a number of transfer students in these classes who are interested in pursuing fields such as pre-medicine, biology, botany, zoology, microbiology, ecology, environmental engineering, medical research, and oceanography. Students, typical of those in most community colleges, are from 17 to 64 years of age with ACT composite scores that range from 12 to 35.

Students, faculty, and administration were surveyed after the Center had been used for one full semester to identify strengths and weaknesses. Students gave high ratings to parameters such as convenience, ease of use, organization, physical facility, content of exercises, ability to get assistance, laboratory manuals, and overall quality of the learning experience. Several suggestions made by students are now being used to improve self-motivation and help prevent students from falling behind. Generally, faculty observed overall improvement in the quality and content of most exercises compared to those performed in the conventional labs. Administratively, we witnessed instant solutions to problems associated with the scheduling of students, faculty, and laboratory space. In general, students, faculty, and administration observed immediate improvement, and early indications are that the Center has been an overwhelming success.

Learning Alternatives
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The Pearl River Community College Dental Hygiene Technology Program is a vocational-technical program of excellence that carries out the purposes of the Carl D. Perkins Vocational and Applied Technology Education Act. It is innovative and creative and provides measures of success. The program design is one which is replicable by other colleges. The Program has a format and design which exemplifies education reform, initiates practices and training that are futurist and avante guard. It is the State of Mississippi 1995 Outstanding Vocation-Technical Education Program Award recipient and was a national finalist for the Secretary's Award for Outstanding Vocational-Technical Program for 1995.

The Dental Hygiene Technology Program has graduated three classes since its inception. All classes have had 100 percent completion, 100 percent licensure and 100 percent placement of program participants. The Program has been recognized by the state and national professional associations and accrediting agencies as demonstrated by its national accreditation and designation as a National Test Center for Dental Hygiene Technology Examination. The Pearl River Community College Program serves diverse populations and special populations. The Dental Hygiene Technology Program is a participant in the Gender Equity Program which recruits and provides services to eliminate sex bias and stereotyping. The program during the 1994-95 program year recruited and enrolled non-traditional students. Two thousand five hundred (2,500) attendees participated in sixty-five (65) outreach and recruitment activities. The program provided five in-service activities for teachers/counselors and administrators. Counseling and support activities are provided on an on-going basis. The program served special populations.

Pearl River Community College Dental Hygiene Technology Program has the following attributes which makes it a model and successful program:

ARTICULATION. The program maintains strong articulation among its secondary, postsecondary and adult vocational-technical education counterparts. There are strong visible ties established and maintained with business, industry and the community.

ACCREDITATION COMPLIANCE. The Program is in compliance with the Mississippi Dental Association and American Dental Association accreditation standards.

STATE-OF-THE-ART FACILITIES. The PRCC Dental Hiegne program is housed in the Allied Health Center. The facilities are state-of-the-art, constructed in 1990 at a cost of $2,740,000 and has 40,000 square feet of floor space. The facility has an on-site clinical laboratory which provides operatory services to the public as well as model instructional facilities including laboratory and classroom settings. The Center is located in a medical hub.

PROGRESSIVE STAFF DEVELOPMENT. The Program maintains a progressive staff development program which is designed to promote the individual's and the program's professional growth. Staff are encouraged to participate in professional organizations, conferences and activities. They are provided time for professional association activities, research, publishing and clinical practice experience.

ACTIVE ADVISORY BOARD AND CRAFT COMMITTEE. The Dental Hygiene Technology Program has an advisory committee which includes dental hygiene faculty, dentists, and dental hygienists from the community. Contact is maintained on a weekly basis with monthly scheduled meetings.

STUDY CLUB. Dental Hygiene faculty began a local study club and hold monthly meetings.

POWERFUL AND DEFINED PARTNERSHIP. The Program has a strong partnership with business, industry and labor which is a two-way system that provides information on dental and dental hygiene practice and serves as a resource in student recruitment, patient referrals and employment requirements and opportunities for the program.

SYSTEMATIC REFORM. PRCC Dental Hygiene Technology Program demonstrated well defined systematic reform which clearly demonstrates coordination with state policies and initiatives as they align with the national reform initiatives, the Perkins Act, the Goals 2000, Education America Act, the Improving America's Schools Act and the School-to-Work Opportunities Act.

INTEGRATION OF ACADEMIC AND VOCATIONAL-TECHNICAL EDUCATION. The Dental Hygiene Technology Program has demonstrated planned coordination and sequencing of course, curricula and has fostered academic and vocational-technical competencies and contextual learning. The curriculum includes content in four areas: general education, biomedical science, dental science and entail hygiene science.

DEMONSTRATED EFFECTIVENESS BY PERFORMANCE OUTCOMES. One hundred percent of Program Participants completed programs, 100 percent of Participants completed licensure requirements, 100 percent of participants were employed and placed in their field with a salary range on or above the state and

regional average with salary ranges of $15 to $18 per hour in the first year of employment. One student scored in the top three percent on the National Licenser Examination in 1995.

STUDENTS HAVE KNOWLEDGE OF ALL ASPECTS OF THE INDUSTRY. The scope and depth of the program provides the student with experiences, curriculum exposure to business and industry, instructional quality, state-of-the-art facilities and equipment, ethical and personal development.

The Management Program
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The Pellissippi State Management Program educates students to be business persons especially as first-line team leaders and team members and as small business people. The Program has been very successful in doing that. Only one the 48 total graduates from the classes of 1992, 1993, 1994, and 1995 did not find a job in his/her chosen profession. The average starting salary was almost $20,000.

The foundation of the curriculum are courses in basics such as Accounting, Economics, Professional Speaking, Computer Applications, Financial Management, Business Law, Principles of Marketing, English Composition, Precalculus, Statistics, and Humanities. More importantly, the heart of the curriculum is a core concentration of leadership and operations courses. The leadership courses are Principles of Management, Team Leadership, Human Resources, and Management Issues. The operations courses are Quality Improvement, Customer Service, Entrepreneurship, Production Operations, and Information Systems.

One of the things that sets the Management Program apart is the extensive use of electronic mail (e-mail) for general student communication, advising communication, and communication in courses. This extensive use of e-mail gives the Program's students lots of applied computer use. General and advising e-mail is sent over the College's computer system using a distribution known as Management INFONET. Of the nine leadership and operations courses, five have formal, graded e-mail requirements while the other four require less formal use of e-mail. The Program's two courses that use e-mail most extensively are Information Systems and Management Issues. These are also the best examples of the types of learning experiences the Program's students get.

In Information Systems, teams made up of four to six students are assigned one segment of a simulated company for which they are to research and design computer hardware and software. At the end of the semester, each team makes a formal written and oral proposal to management requesting funding for their system. The first half of the semester the class meets at its regularly scheduled

class time. The last half of the course is unstructured and teams must meet by themselves to accomplish tasks. All through the semester each student and team are required to mainly use e-mail to communicate with each other and with the instructor.

The Management Issues course is the Program's capstone course. Soon-to-be graduates synthesize and apply what they have learned in their prior courses. The major learning experiences include team management of every class, leading meetings, team task organization, simulations, case studies, role plays, guest speakers, management readings, peer performance evaluations, dressing for success, creating a placement file, and interviewing practice. The instructor does all assignments by e-mail. Students are required to use e-mail to communicate with each other and the instructor nearly every day.

The advanced teaching approach taken in these two courses is done on a smaller scale in all the other leadership and operations courses. Graduates with these types of learning experiences are the main reason for the Management Program's high placement rate.

Novell Certified NetWare Engineer(CNE)
Certification Preparation & Microsoft Certified Systems
Engineer Preparation Programs
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For the past two years Shoreline Community College has successfully operated two in-depth local area network (LAN) training programs for vocational students. Students entering these programs desire careers as LAN administrators, mangers and support personnel for Novel and Microsoft network operating systems. Positions in this field are among the three fastest growing occupations in the State of Washington both now and through the year 2010. This growth profile is paralleled by the statistics that are available on the national level. The projected number of LAN servers installed in 1995 were 3,230,000 and in 1998 the number will grow to 4,697,000. Average starting salaries are $20,000.

These programs have built upon the linkage between certification and employability. The direct link between technical certification and improved service quality and productivity has been validated in the Technical Training and Certification: Outlook Opportunities study conducted by Dataquest Worldwide Services was jointly commissioned by Compaq, IBM, Lotus, Microsoft, Novell, and Drake Training and Technologies. The findings reflect interviews with over 8,500 certification candidates and information services managers. Findings indicated that more than 59 percent of the certification candidates surveyed considered their training "Very Valuable"; over 75 percent expected certification to assist them in securing future jobs, while nearly 60 percent sought certification as a means to advancement.

These programs are unique to community colleges for a number of reasons. First, they employ state-of-the-art technology through the use of mobile computer labs made up of networked laptop computers. Second, the workshops are designed for those who are working or in transition between jobs or changing careers; concentrated contact in evening, weekend and all day meetings address this need. Third, most of the Shoreline program courses are 60-70 percent hands-on. Students walk away with real life experience. Fourth, these students have a substantial time commitment to prepare for the certification examinations that are administered by a third party -- Sylvan ProMetric, a national test administration service used by Novell and Microsoft. Shoreline offers these students continued lab access following the completion of the workshops even though they are not officially registered. Fifth, courseware is of the highest quality. The handbook each participant receives for a workshop serves as a vital reference tool with exercise and reference material while in training and on the job. Sixth, students are given a Satisfaction Guarantee that permits them to retake all classes in the program on a space available basis. And finally, all program instructors are drawn from industry and hold the appropriate certifications for the workshops they teach. This has proven to be the best mechanism to keep class content current. These instructors use Novell and Microsoft LAN systems on a daily basis and must keep pace with changes on the job. By staying current they are able to give students the most up-to-date understanding of each operating system's functionality. This level of currency is extremely difficult to maintain by full-time faculty.

The benefits to the College have been substantial:

- Converted regular classroom space to an instant PC lab.
- Provided an advantage of delivering training off-campus or any room on-campus.
- Maximized the use of resources for both rooms and computer lab availability.
- Allowed state-of-the-art applications desirable for student learning.
- Improved economics and flexibility of training in small groups in different locations.

Supported the potential to offer new types of courses, i.e., mobile computing, remote computing, fax/modem use, etc.

The benefits to the students have also been substantial:

- Higher levels of productivity on the job.
- Access to advancement in LAN administration career track.
- Above average placement upon completion of testing.
- Opportunities open for full-time work prior to final certification.

The program is completely adaptable by other colleges. Market demand in some areas may not be as great in the high technology fields as in Seattle, however, the persuasiveness of local area networks is so great that virtually any region could run programs modeled after the Novell Certified NetWare Engineer Certification Preparation and Microsoft Certified Systems Engineer Certification Preparation programs at Shoreline Community College. Each program carries from 8 to 10

vocational credits. Enrollments are kept at 10 and 14 respectively. Enrollments above 14 require additional staff and support costs. Support of the training programs is accomplished as part of a workload for the Northshore Center's computer lab technician. State-of-the-art technology is a requirement and must be cycled out every three years to keep pace with hardware and software changes. The equipment was purchased through the State of Washington via lease financing arrangement.

Online Instruction;
Creating New Instructional Delivery Systems
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James Burke and Jay Field have developed a pilot web-based instructional delivery system for their course, "Doing Business on the Internet." The course has been taught for the last three semesters and is being taught during the Spring 1996 semester as an online course for the first time.

One of the goals in developing this course has been to increase accessibility to instruction. The Sonoma County Jr. College district is exceptionally large and many students are forced to drive up to two hours to get to campus. This project allows students to enroll in the class from anywhere in the district or even any Internet connection. In addition, the college is providing open lab time to provide access to students who do not have computers or an Internet connection at their home or office. Providing instruction to students in remote locations can be easily accomplished by delivering content, providing immediate feedback, utilizing online class discussion lists, and by submitting quiz and test information over the Internet.

Many e-mail based courses are already in existence; however, this program is different in that it makes full use of some of the recent innovations on the World Wide Web. Students can fill out the college application online and submit it to the admissions office. Next, students can log on the course home page and receive complete instructions on enrollment.

With the installation of an application called "Real Audio", students are able to receive verbal communication from the instructors either in real time or as saved audio files that can be used as tutorials for various aspects of the class.

Student outcomes and satisfaction are being measured by a research study that is being conducted in cooperation with the college Research and Assessment Office. Student grade distributions, student retention, and perseverance are all being measured as a part of the project. Comparisons are being made between the online course section and the two sections of the course that are being taught in traditional computer labs at scheduled days and hours.

This project provides students with distance-flexible and time-flexible learning opportunities. It provides access to instruction for students who would otherwise be

unable to travel to campus to take courses. Though this method of learning is not for every student, it is one more avenue for training students and helping them to secure employment.

This pilot course will be used as a model for other disciplines on campus. Already, there are at least four other courses that will be online for the fall 1996 semester. The model may also be adopted by other colleges. In fact, we have been asked to prepare a workshop for the Conference on Information for other colleges.

Radiography Technology Program
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The curriculum for the Radiography and Radiation Therapy Programs contains a high concentration of science courses including physics. Although the programs have selective admission policies, the students generally have difficulty applying the physics concepts to the technical courses.

A grant application was completed which designated a small faculty committee comprised of a representative of the Math and Science Department, the Radiologic Technologies Department, and the Social and Behavioral Sciences Department. They met with students and faculty, who were involved in mathematics, science, and Radiologic technologies courses, to determine which areas needed to be strengthened and developed. The decision was made to develop computer materials to aid the students in the designated areas.

The units that were developed represent a wide variety of information ranging from mathematics drills to exercises requiring the students to make decisions regarding technical information. The units are colorful and have sound; most are interactive. The students are provided with a descriptive listing of the programs and may use the materials anytime the lab is available. Due to the importance of some of the information, the completion of various units are listed as course requirements. When required, students must reach a minimal score of 85 percent on each unit and may repeat the unit as often as necessary. The students are generally positive about the use of these materials and feel they are helpful in providing the opportunity to meet the educational goals.

Supervision Degree and Certificate Programs
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Owens Community College, Ameritech and the Ohio Manufacturer's Association have formed a partnership to bring Skill Link to the Findlay and Toledo communities. Skill Link simulates a live classroom experience, using a two-way, full-color, full-motion, interactive video system transmitted over a public fiber-optic network to six participating businesses.

Through Skill Link, the Owens Community College's Business Division has taken the Supervision program to the industrial workplace. Skill Link enables instructors to use dynamic tracking tools like: film clips, graphics and personal computers; and provides for interaction between students and instructors at four different sites simultaneously. The advanced technology of the multi-media, fiber-optic classroom has provided on site education in basic and advanced supervision skills for students from businesses in Toledo and Findlay.

Student and instructor critiques have supported the effectiveness of the Supervision program delivered over Skill Link. Among the most common comments from students are: "I value the opportunity to learn without having to travel to campus," "The multi-media presentations provide for stimulating class sessions," "I enjoy sharing experiences with a variety of students at different locations and "the instructor was extremely knowledgeable and competent in delivering valuable lessons." Instructors' comments also reflect overwhelmingly positive reaction: they enjoy having a variety of media options and the richness of experiences shared between students. From the Spring of 1995 to the Spring of 1996, the Supervision program delivered through Skill Link has grown from 197 students to 438; this represents a 223 percent increase in participation. The Supervision program and Skill Link have shown the value and effectiveness of a partnership between industry and education for the benefit of the community.

Use of Interactive Multimedia to Enhance Instruction of Students Enrolled in Human Anatomy and Physiology
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Many students enrolling at Darton College are first-generation students from a predominantly rural Southwest Georgia. The region is characterized by a diminishing agricultural economy, substantial poverty, a high rate of public assistance, considerable unemployment, a high educational dropout rate, and low

student achievement scores in grades K-12. The area has a 44 percent minority population.

At Darton College over 1/3 of the enrolled students have claimed nursing and allied health as their major. In order for these students to progress toward their degree, they must take Human Anatomy and Physiology as their first and only science course. Because it is not possible to place college course prerequisites on this course without jeopardizing accreditation for nursing and allied health programs, students who enroll have a very diversified educational background. At our institution, the typical student for this course is usually an older than average female student with little to no science background. This creates special challenges for instructors trying to bring weak student backgrounds up to the level where they can successfully compete in the class. To provide instructors with more time to spend on basic science remediation with their students, the Biology Department has designed several interactive multimedia modules that meet the specific educational needs of our student population. Specific modules that have been developed to date include those on body regions and positions, basic anatomy and physiology terminology, introductory chemistry, and interactive testing. In addition, modules on cell membrane mechanics, DNA replication, and gene regulation are currently under development.

Each of these modules was developed using the multimedia authoring software "Authorware." "Authorware" is a program that allows for the development of interactive modules that can be interfaced with CD-ROM, laser disc, and VCR. Each module is completely interactive, utilizes multiple multimedia resources to reinforce each lesson, and evaluates the progress of each student. Students currently work on modules on computers in the biology laboratory, the computer laboratory in the library, and the new multimedia technology laboratory in the Science/Mathematics Division. In the near future, these modules will be available for student usage on the campus local area network.

A brief description of each of the interactive multimedia modules currently being used is provided below. All programs were developed in-house to meet the specific educational needs of our regional student population.

Body Regions and Positions

Using imported images and computer generated graphics, a module that shows different regions of the body and different body positions was developed to assist students to learn their basic anatomy. This interactive module allows students to move at their own pace to learn how to identify body regions and positions that are essential to understanding the material presented in lecture. The program is interactive and provides students with additional information if they are having difficulty with answering specific questions. Student progress is recorded so that both the student and instructor can monitor progress.

Basic Anatomy and Physiology Terminology

This interactive module assists students with learning basic prefixes, suffixes, and root terms for anatomy and physiology. Computer graphics help to reinforce the proper use of terminology. This module allows students to move at their own pace. The program is interactive and provides students with additional information if they are having

difficulty with answering specific questions. Student progress is recorded so that both the student and instructor can monitor progress.

Introductory Chemistry

This module is designed as a tutorial to assist students to understand the basic principles of chemistry that are required for anatomy and physiology. This module emphasizes basic atomic structure, molecular bonding, and basic inorganic and organic compounds. This module uses a variety of graphics and animation's to demonstrate chemical principles.

Interactive Testing

To evaluate student comprehension of each lesson, questions are randomly extracted from each module. All questions are designed to be interactive and provide each student reinforcement for correct answers and supplemental information for incorrect answers. Each test bank is designed so that only the students' first response is scored. Students cannot exit a question until they determine the correct answer.

The students who have used the modules have demonstrated a better understanding of the basic principles covered in each module. Due to the effectiveness of each of these modules, course instructors have been able to spend more time instructing students pursuing degrees in nursing and allied health.

SECTION IV

PROGRAM AWARD WINNER

Camp Wysiwyg
Anne Arundel Community College
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Anne Arundel Community College, near Annapolis, Maryland, serves about 6000 credit FTE students annually, with a faculty of over 500, full- and part-time. In summer 1995, anticipating the implementation of a new general education requirement for computer competency and an infusion of new technology in the coming year, the College expanded its professional development effort to prepare faculty and staff to use technology in support of the College's vision of itself as a "premier learning community." Camp Wysiwyg was one very successful component of this program.

After surveying faculty and staff to determine technology training needs, the College offered three weeks of Camp Wysiwyg in June and August. Thirty eight sessions, two to five hours long, scheduled in various computer facilities on campus, covered a wide range of technology applications: Electronic Databases, Local Area Networks, Introduction to Computers, Internet, Word for Windows and Freelance Graphics, among others. All sessions emphasized classroom applications; some focused exclusively on pedagogy or discipline-specific technology applications. People had the opportunity to use technology applications already available on campus or get a sneak preview of applications that would be available in the coming year. In short, we tried to offer something for almost every level of technology skill and interest.

We kept costs low by paying our own faculty and staff a small stipend to run the sessions. In total, we spent just a little over $4000 for instruction and about $800 on snacks.

One hundred and sixty eight participants filled almost 500 seats during the three weeks. About two-thirds of the participants were faculty, full-time and part-time; the other third were staff and administrators who were allowed to fill any seats still open after the faculty registration period. Those who completed the sessions could earn professional development credits applicable to promotion.

Evaluations of the sessions were uniformly positive. Ninety percent of the participants rated their sessions at 4 or 5 (out of 5). Only three evaluations rated sessions at 1 (the lowest). Respondents also made suggestions for future sessions, and these have become the basis for planning the 1996 program.

In a follow-up in December 1995, more than half the respondents indicated they had been able to apply the knowledge and skills gained at Wysiwyg to their work Faculty noted, for example, that they had been able to incorporate graphics into assignments, handouts, and classroom presentations for students, that they were more comfortable using electronic research sources, and that they had moved confidently into using computer applications in their classes. Staff also noted that

their training had helped them design new tools or assist students better because they had a better grasp of the technology. Those who hadn't been able to use their skills were mostly those who didn't yet have a computer on their desk or didn't have Windows yet, and therefore, lacked the means to use what they had learned.

Overall, participants overwhelmingly indicated that they looked forward to participating in future Camp Wysiwyg sessions and would recommend the experience to other college employees.

Besides offering direct training in technology skills and pedagogy, Camp Wysiwyg also helped to reinforce a sense of shared vision. A class in Corel Draw, for example, might include faculty from Social Science, Humanities, and Math, as well as Print Shop personnel, academic advisors, Public Relations staff, and division chairs. It was often enlightening and encouraging to see how technology was being used in widely diverse ways to support the College's mission. Many participants commented that the opportunity to learn from and share ideas with colleagues was one of the most attractive features of the program. "It was the most positive professional development experience I've encountered at the College," one faculty member noted. "I thoroughly enjoy classes with colleagues, taught by colleagues."

A side effect of this shared vision was the creation of a de-facto support network. During Wysiwyg sessions, participants got to meet at least a dozen others who were interested in the same use of technology. Back in their offices, campers were more likely to try a new technique because they knew someone who could help solve a problem or celebrate a success.

The camp experience also gave many faculty members a first-hand view of how technology affects learning. They noticed how things like classroom layout or hands-on use of the computer or the use of an LCD panel affected their experience in these sessions. Becoming students again in areas where many were beginners generated some useful insight into the teaching and learning processes.

Another indication of Camp Wysiwyg's success is the fact that colleagues from some of our sister community colleges asked if they could pay to attend our session, and our local public school system has asked us to run Camp Wysiwyg sessions for their teachers this summer.

The Camp Wysiwyg format is extremely flexible, allowing technology training at many different levels, easily changed as the institution's needs change. It can accommodate large numbers of people and can be expanded relatively easily. It draws on existing expertise among faculty and staff and develops a common vision of how technology can support the College's work. It is also fairly simple to administer. A Microsoft Access database handled enrollment, class lists and individual schedules as well as evaluation forms and certificates of completion for all participants.

Integrating technology in academic institutions requires, as everyone is aware, more than just money for infrastructure, hardware, and software. It requires a huge, continuing investment of human resources. Faculty and staff need to feel comfortable with the technology in order to take advantage of its power and develop new strategies for teaching, learning, and student support. At Anne Arundel Community College, Camp Wysiwyg has allowed us to meet the needs of many of our faculty and staff in an inexpensive and enjoyable way. As one component of our overall technology integration program, it has been very successful for us, and we believe it is a model that can easily be replicated at other institutions.

Center for Teaching and Learning
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The Center for Teaching and Learning (CTL) at Miami-Dade Community College--Kendall Campus is a comprehensive resource for professional development and performance excellence. One of the goals of the CTL is to support the development and integration of instructional technology into the curriculum by providing training, consultation, and support in the use of computers, videodiscs, multimedia and on-line resources in the teaching/learning process.

The CTL has been innovative and creative in its approach to reaching this goal. Working collaboratively with other units on campus, a variety of programs has been implemented. The following are examples of the CTL's programs for staff development focused on the application of technology to the classroom.

Technology Training

The Kendall Campus of Miami-Dade Community College has been providing technology training for educators since 1983. A key feature is the ability of the campus to tailor the technology training to support the specific instructional technology plans for the various departments and individuals. The CTL has knowledgeable staff, hardware/software tools, and experience on multiple platforms--Macintosh and Windows. The Center staff has an outstanding record of experience and service in providing quality technology training. Workshops are offered on such topics as introduction to computers (Macintosh and Windows), word-processing, database, spreadsheet, art/graphics tools, using videodiscs and CD-ROM discs in instruction, authoring tools (Course Builder, Director and Toolbook), making digital audio/video files, telecommunications, exploring the Internet, using campus e-mail, and creating multimedia projects.

Working with Departments/Individuals

The CTL works closely with the academic departments on campus to facilitate the integration of technology into the curriculum. These efforts involve:

Department presentations on using technology

Master Plan for Integrating Technology

Lab Curriculum Guides

Identification of software appropriate to the discipline

Opportunities for Courseware Development and Sharing

Faculty, staff, and administrators on the campus have numerous opportunities to become courseware developers and to share these materials with others on the campus. Examples are:

CAP -- Computer Application Project

The CAP program is designed to provide faculty with a computer, printer, and necessary software in order to complete a project which will lead to the integration of computers into instruction. In short, the goal is to promote the use of technology by students. Faculty request a computer by completing an application from. This computer may be used on the campus or at home. The number of projects is limited so this is a competitive process.

Technology Practicums

Technology Practicums provide an opportunity for faculty and staff to participate in a program designed to provide time and individualized consultation in developing technology tools to improve instructional effectiveness. Faculty receiving a practicum have the opportunity to be released from classes for the Spring and/or Summer terms, since many faculty need time to develop something of this caliber.

Technology User Groups

Staff from the CTL coordinate the MacUser Group and the Windows User Group which meet monthly and usually plan programs which involve faculty/staff presentations and demonstrations.

Technology Showcase or Technology Symposium

At least once a year, faculty participating in the CAP or Technology Practicum programs are asked to demonstrate their completed programs for their department chair, dean, and other faculty in the department or on the campus. This presentation is accepted as the final report of the project by the faculty member. The symposiums are excellent opportunities for faculty, staff, and administrators to learn what others have developed. This not only contributes to future interest in developing programs, but helps make known what is available on the campus.

Electronic Classroom Instruction

Training in how to use an electronic classroom is provided. Computer labs are available for faculty to bring their classes to work as a group. If faculty need training in how to effectively take advantage of this lab, they may request a member of the CTL staff give their students an introduction to computers during the first class in the lab.

On-line Resources

The Center supports and trains faculty to use an electronic bulletin board system (the Electronic Learning Forum, ELF) for class and open forums, e-mail, and on-line courses. In addition, it supports efforts in development, publication, and maintenance of departmental, faculty, and course information on the World Wide Web.

Instructional Technology Notebook

The CTL produces and distributes to all faculty and instructional staff a handbook which provides information about resources and services available for integrating technology into the curriculum, informs faculty about the various computer labs available, offers suggestions on "How to Get Started" in learning how to use and integrate technology and how to develop software.

Grant Writing Assistance

Assistance in writing technology grants is provided to faculty, and the CTL also pursues grant and foundation opportunities to enable the college to stay at the leading edge of technology training.

Measures of Success

One measure of the success of the CTL program is a Faculty/Student Survey on the Effectiveness of Using Technology in Instruction. This report entitled "Instructional Technology Makes a Difference at MDCC-Kendall Campus" contained the following results:

- Technology has increased faculty effectiveness in teaching and student effectiveness in learning.
- Positive attitudes regarding the use of technology are evident from student and faculty responses.

Another indication of the success of CTL efforts is evident in the results of the annual Master Plan for Technology assessment of computer literacy and application of technology. Of the over 300 academic faculty:

- 99 percent are aware of the potential uses of technology in instruction
- 92 present are capable of using technology for preparing instructional materials and/or classroom management
- 53 percent are using technology with students (classroom presentations, lab assignments)
- 27 percent have developed computer based materials which are used in class delivery
- 9 percent facilitate students in their development of computer-based projects (multimedia reports, classroom presentations, learning materials.)

These results are the cumulative effect of having made the integration of technology into the curriculum a campus priority since 1983. Additional progress is made each year through CTL programs for staff development centered on the application of technology to the classroom.

Distance Education: Staff Development

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College of DuPage has had a large (8,000 students per quarter) distance education program for many years. In the past, faculty relied on the familiar formats of one-to-one conferences, print, audio, and one-way video. The installation of a two-way interactive video classroom, increased use of computers and access to the Internet, and administrative support encouraging classroom-based faculty to teach in a distance education format have increased demands on faculty to utilize new technology.

In most cases, faculty members do not have a clear idea of what their role would be in the world of distance education because they do not have an overview of all that the title encompasses. Making decisions about format delivery using new technologies without knowledge of the full range of choices and the impact of each delivery format on teaching and learning would be deleterious to the survival of the systems in any institution. Frustrations with a system that has much to offer faculty and students might lead to premature dismissal from consideration.

The following staff development program was designed to prevent this scenario. Faculty were offered a three module sequence to provide them with adequate information upon which to base a decision about technology, distance education and teaching and learning. Briefly, the first module was designed to introduce faculty to the philosophy and research of distance education and the wide variety of technologies available to deliver courses and the changing role of the teacher in these formats. Hands-on experience in the new technology delivery formats was provided in the second module. Ideas for development or revision of a course utilizing a newer technology in a distance education format were explored and supported in the third module.

Module 1: An Overview of Distance Education

Objectives: To introduce the faculty to the philosophy and research in distance education and the wide variety of course formats and technologies available. To provide them with adequate information about the demands of the various formats as well as their own teaching styles. To allow information about the demands of the various formats as well as their own teaching styles to allow for an informed decision about continued involvement with these delivery systems.

Course Format: Readings on research in the field of distance education in five topic areas: History and Definition, Instructor Issues, Student Issues, Materials, and The Future. Faculty were involved in an assessment of their teaching styles and on the demands of the technology. The issues raised focused on what would need to be changed by them to accommodate the technology and some evaluation as to whether it was worth the effort. Discussion of various teaching styles fitting with different technological delivery methods with minimal adaptation was also a focus of this module. Also covered was how to combine various methods of delivery to achieve an adequate learning environment for students. This section

also covered student learning styles and the possibility to address the diversity among students with use of a variety of technologies.

Final Project: Each faculty member was asked to do a self-assessment of his/her teaching style and learning goals for the various technologies utilized in distance education. Faculty were to identify the areas of easy transition as well as areas of concern where they feel they may encounter some difficulty adjustment. For each area of concern they were to include suggestions as to how they would be able to adapt their style or the technology to address the perceived area of adjustment. Finally they were asked to consider how the information they obtained from the training might alter their traditional classroom delivery styles.

Module 2: The Electronic Classroom (Two Way Interactive Video)

Objectives: To provide faculty with the necessary information and skills to teach effectively in this format. To address faculty concerns specific to delivery of courses in this format.

Course Format: This module covered the differences between the electronic classroom and the traditional classroom. Issues covered were: pacing, uncomfortable topics, dressing for the camera, engaging students, coordinating group interactions, dealing with privacy issues, preparing materials for video delivery, limits on the technology, and accessing logistical support. This module was delivered in part through the electronic classroom. A presentation of the technology and a hands-on lab that would allow participants to experiment with using the equipment was part of their experience.

Final Project: Faculty were divided into two groups and sent to two sites where they "taught" each other via the two way interactive video technology.

Module 3: Support and Development

Objectives: To provide faculty with ongoing technical and logistical support to develop their ideas for new or revised courses utilizing newer technologies in distance education.

Course Format: Group discussion of issues that surfaced during the previous two modules. Faculty experienced in the various technology delivery formats were available to serve a mentoring role with individual faculty or a group. The goal is to bring some of the ideas generated through to fruition at least throughout the development stage.

Final Project: A written design project for a new or revised course utilizing one or more technologies. It will be up to the individual instructor if he/she will pursue implementation of the development plan.

Each Module in the Staff Development Course is one quarter in length and available for one hour of staff development credit. It will be offered on a yearly basis. Class limit of 25. A quarterly review by faculty teaching the module with feedback from faculty taking the modules will be done to continually improve the series.

Unlike most other staff development offerings in distance education and emerging technologies, this series is not only a "how to" course in technological advances in education. It is an attempt to explore the full range of offerings and the

implications each technology has for the individual faculty member in teaching and learning. The self-assessing component puts the responsibility for identifying necessary adaptations on the faculty. The faculty self-select this course; they determine for themselves what technologies match their style of teaching; they identify the adjustments that need to be made. The class members and leaders serve as a source of ides to aid in the generation of possibilities to ease the adjustments. Module 2 serves as the "how-to" for one of the latest technologies available on our campus. Module 3 allows the faculty to follow through on their ideas in a group setting with available support for instructional as well as technical issues. The development and implementation of a new or revised course utilizing the new technology is gratifying for all involved.

Enhancing Teaching & Learning with Technology:
A Multi Media Staff Development Program
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The recently merged Community Colleges of Baltimore County System (Catonsville, Dundalk, Essex) have encouraged collaboration on professional development projects of mutual interest among all the faculties, rather than offering programs only on individual campuses. Since each college had an instructional objective of expanding the quality of instruction using technology, the Deans of Instruction agreed to a faculty recommendation to hold tri-college technology conferences and workshops throughout 1995-96.

An informal faculty support group of technology users had begun to meet on the interactive video network in October, 1994, to discuss using multi-media in the classroom. Eventually their discussions led to the idea of a tri-college technology conference during the late summer prior to the start of the semester. This all day August conference brought together about 200 faculty who participated in 22 faculty presentations and nine hands-on workshops on Power Point, digital technology, Internet, spreadsheet applications, Multi-Media Toolbook, Chem Draw and other methods of incorporating technology into all the disciplines. A nationally recognized speaker, Dr. Christopher Dede of George Mason University, provided the keynote address which set the tone for the break-out sessions. Lunch was provided for all participants, and the day ended with a reception. Door prizes of software were presented to some fortunate faculty.

This summer conference was followed in January by Part II: a three-day series of additional workshops on Icon Author, Surfing the Web, Netscape, Lotus Organizer, Superpaint and Maple, and repeats of some of the August sessions. This program was attended by about 150 faculty. Both events were highly evaluated. Costs were minimal since faculty taught faculty, and all travel was local.

This was the first time faculty from the three colleges jointly initiated, planned and sponsored a professional development program, and it set a standard of

excellence and enthusiasm which will continue. Such a program is easily adapted to other institutions: using local expertise, meeting a high need, involving only local travel, maintaining low cost, facilitating follow-up consultations, using existing college lab facilities, etc.

Through the efforts of dedicated and talented faculty organizers, presenters and facilitators, the First Annual Multi-Media Conference on "Enhancing Teaching and Learning with Technology" provided to over 200 faculty a clearer notion of the current directions of multimedia in the classroom, enthusiasm for some of the best applications, improved skills in the use of software, and a resource list of colleagues with whom to share ideas.

Faculty Training and Development Center
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Problem: how do you train and motivate a staff to incorporate technology into the teaching-learning process when almost none of them even has a computer? That was the dilemma facing Volunteer State Community College (VSCC) four years ago. Yet since that time the change from a computer-illiterate to computer-savvy staff has been nothing short of remarkable. Locally produced multimedia applications, Internet Web pages, electronic slide shows, computer-based home study courses, and interactive television have all become a daily part of instruction both on and off campus.

As a public two-year community college located just north of Nashville, Volunteer State serves a twelve-county region in northern Middle Tennessee. Through the 1980s VSCC, like many institutions, struggled with small enrollment increases and budget cuts. And like many institutions funds for technology equipment were simply not made available. By 1991 there were three computer labs on campus with a total of 60 microcomputers to serve 4,000 students. Two of the labs were 8086-based computers with no hard drives and monochrome monitors. The faculty and staff were even in worse shape. Only ten faculty members had an 8086 microcomputer on his or her desk. There was no structure in place for training faculty or helping them with any problems they might encounter.

By the early 1990s the seriousness of the situation was resulting in increased faculty frustration. Some of the staff recognized that technology could make a difference in the teaching process, yet there was simply no equipment that could be utilized. The rest of the staff had barely even touched a computer, and had little motivation to learn about it if they could never use it.

Yet change was in the wind. In 1991 a new Chief Academic Officer brought to campus an understanding of how technology can improve teaching. A six-month comprehensive study was commissioned to identify the problems and recommend solutions. The members of this committee, made up of faculty, students, staff and

industry representatives, immediately targeted the lack of computer equipment as the major problem and recommended a plan to purchase computers for all faculty, increase the number of student labs, and upgrade networking and telecommunications facilities both on and off campus.

However, the committee soon realized that purchasing equipment was not the solution to the problem. There must be an infrastructure in place to support the new equipment, in terms of training and continued support.

From this realization was born the Faculty Training and Development (FTD) Center. The vision was to provide an environment in which faculty would feel free to come learn about computers and technology in a comfortable environment. Training sessions would be scheduled for the entire semester for staff to attend. Also, a process to supply on-going support would be implemented.

The FTD was started in the fall of 1992 with two computers in a converted faculty office and a full-time trainer. Needless to say, there was room for improvement. Twenty new 80486 computers were purchased for faculty members that fall. Those faculty who wanted a computer submitted a request to their division chairperson who then prioritized those requests and forwarded it on to a faculty committee, the Academic Computing Committee. This Committee reviewed the requests and suggested the computer allocation. As part of the agreement for receiving a computer, the faculty member had to agree to attend at least five training sessions at the FTD each semester.

The initial training sessions covered the basics of microcomputer hardware, operating systems, and the specific word processing and spreadsheet software that was being introduced on campus. Due to a lack of space in the FTD these sessions were conducted in a computer lab. Generally attendance averaged about 10 to 15 per session. Yet several faculty members indicated they felt inhibited in such a lab setting. We quickly moved to arrange smaller group and even one-on-one sessions in addition to the larger training sessions.

A telephone support hotline was also started at the same time. The technician who staffed this HelpDesk was likewise responsible for checking out equipment which faculty could use in their classroom (LCD panels, notebook computers, multimedia systems) as well as at home. The support technician likewise communicated to the trainer what problems were being reported so that training could be adjusted to meet these problems.

The construction of a new library/learning resource center provided a new home for the FTD in 1994. A large, spacious area on the second floor of this new facility has provided the space for twelve microcomputers (all networked), scanners, color printers, and the latest in multimedia equipment and technology.

The success of this training program can be measured in several ways. One method is the 1147 participants in training sessions.

Another measure is the level of technology which staff are bringing into their classrooms. At the present two faculty members from six different divisions are currently producing their own multimedia applications for presentation in the classroom. These faculty meet on a regular basis to relate successes and discuss problems they have encountered.

In addition, the explosion of the popularity of the Internet has likewise raised the bar in terms of faculty interest. One faculty member from each division is responsible for maintaining the information regarding that particular area on the campus' Web page. Disciplines ranging from Emergency Management Technology to Meteorology to Business all use information available on the Internet in classroom lectures.

The feedback from the staff regarding training has been excellent. Using a combination of large group, small group, and one-on-one training, along with the necessary day-to-day support, has provided the basis for the staff to become more than just computer literate. They have now taken upon themselves the initiative to incorporate new technology into the teaching-learning environment.

Golden West College Multimedia Faculty Developer Network
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The Challenge

Interactive multimedia technology is likely to have a revolutionary impact on education akin to the printing press. At Golden West College, we are challenged by faculty interest in exploring interactive multimedia to discover new ways of learning and teaching.

The Plan

In the Fall of 1994, the GWC Vice President of Instruction, Dr. Margie Lewis; Dr. Sharon Ratliffe; and New Media Director/Associate Dean, Doug Larson, met to develop a strategy for encouraging faculty to integrate Multimedia into their courses. A number of steps have led to the Multimedia Faculty Developer Network which currently has faculty waiting in line to participate in the network.

Steps Leading Up To The Network

Step 1: Show and Tell
Staff Development provided support of six competitive mini-grants for multimedia demonstration projects developed by faculty during Spring, 1995. These projects were showcased at a college-wide meeting of faculty and staff in August, 1995.

Step 2: If You Build It, They Will Come
Staff Development Faculty Multimedia Mini-Lab was funded by GWC Foundation in Fall, 1995. This lab provides two complete Multimedia development stations for both IBM PC and Apple Macintosh.

Step 3: Open Door Assistance
Multimedia Specialist office hours for faculty were made available to answer faculty computing and multimedia questions. This open door provided a friendly

non-technical approach. Faculty brought questions on which computer to purchase, what software to use and how to use it.

Step 4: Multimedia in Sixty Minutes
Introductory one hour Multimedia workshops were offered at different times and various days for both faculty and staff. These workshops gave an overview of Multimedia and how to simply make dynamic presentations using "PowerPoint" software.

Step 5: Have Multimedia, Will Travel
A portable Multimedia presentation system was made available for classroom use and funded by GWC Foundation. This allowed all faculty with the opportunity to project Multimedia programs in their classroom and not just in specially equipped lecture halls. Faculty are assisted in installing their software and checked out on how to use the system before using it in the classroom.

These steps led to the call for proposals for faculty to self-nominate to become part of the Multimedia Faculty Developer Network, consisting of a maximum of one representative from each academic department. This call generated one of the largest responses ever received to a staff development program.

The Approach: Faculty to Faculty Network

The Multimedia Faculty Developer Network conceived by Staff Development Coordinator, Dr. Sharon Ratliffe, is an approach to lift-off Multimedia learning and teaching on campus. In fact, faculty are currently waiting in line to participate in this innovative program.

The Multimedia Faculty Developer Network, sponsored by GWC Staff Development, is comprised of 21 faculty members, each representing a different department on campus.

Faculty members applying to the Network were selected by their departments to participate in a semester-long Multimedia workshop where they discover and develop examples of multimedia approaches for their department.

At the completion of the workshop, faculty members then present a Multimedia workshop to their department and show examples of Multimedia relating to their discipline. They were selected based on the potential impact of their proposed project for departmental curriculum development and student success. These faculty members are now mentors for their department faculty who participate in future Multimedia workshops.

Faculty applying to the program were required to have basic word processing computer skills and indicate an instructional topic to address in their training. They will be awarded a $500 stipend for their participation in the Network upon completion of the training.

The Multimedia Workshop, conducted by GWC's New Media Center, is comprised of eight one-hour lecture sessions plus a total of 16 hours lab time. Faculty are provided with an opportunity to see a variety of interactive Multimedia examples and techniques from which they choose to create a sample to address their instructional topic.

During the workshop, software and Multimedia programs demonstrated operate on both "Windows" and "Mac" systems. Also, faculty are provided with Multimedia lab stations for both systems. Since interactive programming is complex, faculty utilize pre-programmed interactive templates to create their programs.

The initial 21 faculty will complete their training and projects by May, 1996, and then conduct department workshops, with the assistance of the New Media Center, in August, 1996.

Meanwhile, the overwhelmingly positive responses to the Network concept have resulted in a second call for faculty self-nominations. The second class of faculty to enter the Network will be identified by May, 1996, and will begin training in the 1996 Fall semester. They will be partnered in a mentoring relationship with faculty currently in training.

The Multimedia Faculty Developer Network is successful because it emphasizes learning over technology. Once the groundwork is laid to introduce Multimedia to the campus, the Multimedia Faculty Developer Network is a way in one semester, to expose an entire campus to the potential of Multimedia for instruction.

Instructional Technology in the Classroom
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Butler County Community College (BCCC) opened its Center for Teaching Excellence, a faculty resource center, in 1991. The center, which promotes excellence in teaching and learning, offers professional development opportunities, training in instructional technology, mini grants for special projects, and a resource library.

At this time, the focus of the center is on instructional technology. We believe bringing technology to the classroom is extremely important because technology is everywhere from WalMart to Wall Street. Our educational systems must prepare their students for the future; computer-assisted learning appeals to visual learners; and our students from the public school setting expect technology-assisted learning. We also know from firsthand experience and studies show that successful integration of technology in the classroom has three critical elements: equipment (hardware and software) including both development and delivery units, technology training with on-site support (critical for faculty's comfort, confidence, and creativity), and incentives to promote faculty participation (essential as learning new delivery methods and developing instructional materials is intensely time consuming.)

In 1993, the award of the multi-year Title III grant from the U.S. Department of Education's Strengthening Institutions program included funding for professional development in instructional technology. Grant monies covered the hardware and

software for multimedia development, multimedia resources, funds for faculty incentives to develop projects, and a full-time teaching/learning coordinator who provides on-site, on-going support for faculty involved in new technologies. The Center for Teaching Excellence houses all the equipment necessary for development of multimedia instructional materials and provides equipment for delivery in the classroom. Academic deans have purchased additional delivery equipment to support their faculty in this instructional venture.

All BCCC faculty are encouraged to learn how to integrate instructional technology into the classroom. Our new faculty orientation includes a session on multimedia. We offer workshops on the basics of multimedia during intercession and during the summer; faculty can also sign up for one-on-one sessions. Participants, who must produce a useable classroom product, earn professional development credits or receive overload pay for the time they invest in the multimedia workshops. Faculty who have become regular users of multimedia form a network of peers who coach/mentor other interested faculty as they adopt this new form of delivery. These peer coaches are also reimbursed for their time.

The professional development opportunities offered through the Center include workshops on computer literacy, multimedia, and teaching methodologies. Workshops are facilitated by existing personnel who willingly offer their time and share their expertise with their colleagues. Many facilitators are past recipients of mini grants which funded their attendance at special focus seminars with the intent that they would serve as resources for the center. As the demand for workshops grows, we are developing a training team--several faculty on release time to serve as workshop facilitators on a routine basis. We are also creating a development team who will work with those faculty interested in multimedia, but who lack the computer skills and/or the time to produce usable products. The instructor would be the content person; the team would design and input the project using their instructional design, computer graphics, and programming skills.

Professional development offerings are determined by responses to an annual faculty needs survey. Workshops, which vary in length from one to fifteen hours, are scheduled for each fall, spring and summer semester. Each workshop is evaluated by the participants. The participants create the workshop/training using a Likert scale with five the highest ranking. We are currently researching possible evaluation strategies to determine the effectiveness of computer-assisted instruction. Evaluation of BCCC faculty instruction is now confined to a customized survey form with 15 questions. Students rank faculty using a Likert scale. Faculty who have integrated technology into classroom presentations have the option of designing questions that will give a ranking on the students' perception of this delivery mode.

The college administration gives full support to the center's promotion of technology in instruction. And the Board of Trustees has stressed professional development as a vital component for all college faculty. All workshop participants earn professional development credits that can be applied to educational advancement. College policy dictates that faculty earning nine hours of additional work receive $650 added to their base pay. Of those nine hours, three can be earned through Center activities (one hour of credit requires 15 hours of workshop time). Reports from other community colleges indicate that this feature makes our program unique.

Our program has proven to be very successful. We have surpassed the participation goals set in the Title III grant. Over 28 percent of our full-time faculty have developed projects using multimedia. Of these, 17 percent are in the Business/Industrial Technology division, 43 percent in Humanities/Fine Arts, 38 percent in Nursing/Allied Health, and 15 percent in Science/Behavioral Science/Math. Thirty-five percent of the participants have worked on second and third projects. Many return to the center to enhance their original productions and master more advanced applications. Several faculty members have presented their projects or refinements of them at professional meetings or discipline-related workshops. Others routinely use multimedia as a delivery mode for presentations outside the classroom.

Faculty have responded positively: One music instructor has developed several multimedia units for his lessons on opera. He reports enthusiastically that his presentations are not only livelier but also much more efficient. A click of the mouse brings in just the right audio and video at just the right moment. Nursing instructors rave about the value of animation when teaching how body systems work.

The strength of our program is the on-site technical support provided by the teaching/learning coordinator. Studies nationwide and our local experiences verify that on-going training and support are essential to faculty embarking on new technologies. The need this support to increase their comfort level, creativity and confidence. Additionally, the fact that participation is tied to professional development makes the program very inviting.

Instructor Mentor Program for the Small Technical Institute

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Southeast Technical Institute (SETI) is a two-year associate degree granting institution located in the midwest, has 72 full-time instructional staff and 1500 full-time students. At the core of SETI's academic structure is the Curriculum Committee. Changes and concerns for each SETI program must first have the approval of its Program Advisory Committee consisting of business and industry representatives and then second this Curriculum Committee. Semester after semester and year after year, we heard an "outcry" concerning the preparation of our new instructors. This became a dilemma when we hired eleven new instructors fall semester of 1995.

The first faculty concern lay with assisting veteran instructors who had previously taught in another institution. New instructors right out of industry who had no formal training on educational classroom management was the second concern. The faculty wasn't satisfied with the content the new instructors were receiving from their required college/university educational classes for vocational certification. Therefore, the Curriculum Committee recommended to the

administration who approved the adoption of an all-school volunteer Mentor Committee, with a facilitator in charge who would report activities to the Curriculum Committee monthly. Representatives from both administration and instruction volunteered for this Mentor Committee which included nineteen members inclusive of the divisions (Health, Trade & Industry, Business, Agriculture, and Student Services) at the Institute.

Members at our early meetings researched mentor programs across the United States and suggested implementing some of those segments into our program. We collected data and brainstormed for six months. As a result, we were ready to take the plan of "action" to the Curriculum Committee, and it unanimously supported the proposal. The plan was approved by administration, and more significantly, was approved as a budget line item.

We have developed a three-phase mentor program to assist new instructors. The plan defined the mentor's roles and job descriptions for educational mentors, division mentors, and non-instructional mentors. The educational mentor teaches a course in foundations in post-secondary technical instruction. The division mentor contributes to the mentees (new instructors) self-esteem, gives positive reinforcement, answers specific program questions and is an overall support person. The non-instructional mentor informs mentees on non-instructional concerns including such areas as substitutes, sick leave, professional leave, etc.

This plan focused on practical application so as to give technical instructors the information necessary to succeed in the classroom. To implement our plan, we organized a three-day summer inservice for those instructors volunteering to be mentors. We extended our invitations to representatives of the State Department, the universities and the other technical institutes in our state. We had representation from all constituents which positively impacted the inservice, aimed at further developing this mentor program. The resulting revisions were carried out with a sense of accomplishment. Besides ownership, the staff returned after a month's vacation focused on this task before them. It would be hard to differentiate the variables in establishing the success of this productive group.

Fall semester began with the new instructors coming in a day early as recommended by the Mentor Committee; we were now in the mentoring mode. We began with our non-instructional mentors working with an administrator and discussing the staff handbook (insurance, payroll, etc.) with the mentees. From feedback from the mentees, we learned it was helpful to get acquainted with the building and some of the personnel before the veteran staff arrived. The division mentors upon their arrival greeted their assigned mentees and accompanied them to the all-school inservice meetings. For accommodations sake, no division mentor was ever assigned more than two mentees, and we assigned the new instructors to their respective programs. For the education mentors facilitated classroom instruction for new instructors two weeks later.

The non-instructional mentors were available by telephone or by appointment to discuss any non-instructional concerns as outlined to both the mentor and mentee in previous meetings. The division mentors met weekly with their mentees for the first-half of the semester and tapered off as appropriate. The second semester the mentors rotated new mentees for still more inter-school communication.

Another intricate component was the role of the educational mentors who team-taught a three-semester credit course (consisting of two lecture hours and two lab hours per week for fall semester) to all the new instructors. The educational mentors thoroughly developed their course syllabus and proceeded with the course requirements. Attendance was taken, assignments were given and projects collected. The mentees developed a portfolio of "application" materials for their further use in technical classroom instruction. The new veteran teachers, even the 15-year veteran teachers, reported the class was significant for an updated "methods recharge" and for networking and bonding with the mentors and staff.

We continually collected written data from the mentors, mentees, administrators, and the instructors not involved with the program. The written responses were positive. Veteran instructors are requesting to be mentors and have requested the required class be available to them. Most of the veteran instructors want to become part of the mentor team. Those that don't wish to participate appreciate the fact that new instructors are being assisted so they, themselves, can concentrate on their curriculum. Administrators felt the relief of time constraints which formerly required one-to-one contact for new instructors. The mentees that had never taught before assumed this service was always offered to all new instructors. They were appreciative that a definite contact would respond to them when they had concerns.

Another measure of success is the restructuring of the entire mandated state certification courses. A consultant from another state that currently is in the fourth year of a new mentor program visited and described their program. Again we invited all parties. From a culmination of activities, we are happy to report that this all made a difference. The State Department has restructured the vocational certification courses and has included a mandatory mentoring program effective in the fall of 1996.

This program could easily be adapted to any college. The success revolves around total school ownership and the willingness of the entire staff to tackle a new challenge. We are very pleased with the mentoring program and will continue to consider suggestions to expand the mentor program to part-time staff.

International Language Program
Multimedia Language Learning Center
San Juan College
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Contact Persons: Chris Picard, Kimberly Hayworth

San Juan College has taken an innovative approach to the development of its international language curriculum and the training of adjunct faculty who teach within it. In 1992, SJC hired a Language Laboratory Coordinator/Instructional Designer. She quickly established a fully-computerized multimedia lab to support language instruction, but several problems immediately became apparent. Simply making machinery available would not effectively improve instruction. To reach

its full potential, multimedia technologies must be fully integrated into the curriculum. More important, the faculty must be fully trained in its use.

In response, the coordinator established a highly effective program of curriculum development and faculty training. She selected the Destinos series to enhance communicative-based instruction in Spanish, while French in Action was selected as ancillary material for French. Both provide learning material that is at once audio-visually and culturally rich. Destinos, in particular, presents a storyline where the main character travels to several Spanish-speaking countries. Students are exposed to native-speaker speech in a controlled manner with a variety of regional dialectical differences, idiomatic expressions, and cultural distinctions. They watch small segments of video in the classroom and then are encouraged to discuss what they've seen. The video presents a natural context which allows students to follow the general meaning and flow of the conversation without reverting to English.

The coordinator realized, however, that materials, no matter how rich in content, would not facilitate learning if they were poorly presented. Conventional audio and video tapes, which must be repeatedly rewound, are awkward at best as instructional material in the language classroom. The use of video-laserdisc solved most of the difficulties. Laserdisc technology provides a quality still-frame image as well as full motion video. It was the speed and accuracy of playback, however, that made the new technology infinitely preferable to traditional video and audio cassettes. Through a series of training workshops, adjunct instructors learned how to target specific frames of video pertaining to important native-speaker speech or cultural content and create bar codes which were then printed to laser label sheets and pasted into daily lesson plans. Using a bar code reader, instructors could instantly access pertinent frames of video. They could repeat various lesson segments without wasting valuable lesson time fussing with audio and video tapes.

Multi-media technologies, when effectively used, allow instructors to present more information in ways that connect more directly with the lives of students. The students learn grammar structures in a less "conscious" manner by listening to and observing video sequences. Instructors may talk about family structures presented in the video, introducing students naturally to the vocabulary and structures of the target language. Students are then encouraged to provide personalized answers incorporating real-world knowledge always in the target language. Rather than concentrating solely on grammar paradigms, the instructor solicits meaningful information based on the students' lives and general world experience. Perhaps even more important, in addition to linguistic information, students are exposed to non-verbal forms of communication such as facial expression and gestures. While supplying contextual clues to meaning, the video instantly provides authentic cultural models of behavior.

To supplement and reinforce the classroom instruction, the coordinator designed a required lab component to capture the more mundane aspects of language instruction and to provide a valuable resource center to students. Centered in the Language Learning Center, multimedia CD-ROM tutorials have replaced the traditional "repeat after me." Students can actively practice language applications in private. The computer is infinitely patient and will repeat information as many times as the student desires. There is no stigma attached to this process and students can develop complete comprehension at their own pace. They may listen

to native-speaker speech or watch a full-motion video clip and even record their own voices for comparison. The most technophobic student quickly adapts to the computers. The materials in the lab cover a wide variety of language learning aspects ranging from strict "drill and kill" grammar and vocabulary exercise to completely digitized international tours in the target language.

The Language Learning Center also serves as a multimedia development center for faculty. It was used extensively in the development of Navajo language and culture software. Fort Lewis College (Durango, CO) teacher trainees and education students were trained in the use of authoring software and presentation packages. They then created multimedia lessons to be disseminated across the Navajo Studies Conference (Farmington, NM: March 1995). The LLC Coordinator is currently investigating the pedagogical possibilities of the Internet for intermediate and advanced courses.

Learning Alternatives
Pearl River Community College
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The Pearl River Community College Learning Alternatives Program is an exemplary staff development program which addresses diverse student populations through the application of technology to learning and teaching in the classroom by providing faculty the opportunity to explore learning needs and technology development and to utilize instructional support services and resources. The Program is a three stage process involving a core of twelve faculty from a variety of academic and technical disciplines. The staff development design was to provide experts to motivate and give a basic background then provide mentors, support meetings with peers and experts, learning assistance laboratory staff and personnel to take learning from the "book to reality".

The PRCC Learning Alternatives Program met its goals and objectives to further learning and teaching for ALL students by centering on technology applications. The goals of the program are:

- Increase faculty skills in technology use and software development in the classroom
- Create an atmosphere which facilitates innovative use of technology and computer aided instruction
- Provide faculty with opportunities to understand differences in students and to challenge students to reach their full potential while better understanding themselves and the methods by which they and their students may reach their potential in a course
- Increase faculty awareness and ability to identify diverse student populations and their needs as it relates to learning and teaching

The Program objectives are to:

- Promote the identification of differences in students by twelve faculty in the following areas: 1) information processing styles, 2) perception styles as affected by environmental, emotional, sociological, physiological factors and 3) entrance preparedness on concepts in courses as compared to national college test averages utilizing Productivity Environmental Preference Surveys, Information Processing Styles Surveys, and College Board Course Tests as assessments instruments.
- Provide faculty with technology training, technical support, and resources to develop technology software programs, their technology skills, and organize a set of instructional aids to provide individualized training for diverse student populations through Learning Assistance Laboratory services and personnel, development time, workshops, support meetings, etc.
- Provide twelve faculty stipends, computer aided instruction mentors, monthly support meetings, and learning assistance laboratory resources to encourage innovation in the use of technology and creation of new software for one new course per semester (Microbiology, Developmental Reading, Intermediate Algebra, Drafting and Design, Music Appreciation, American History, World Literature, English Composition I, Business Communication, Child Development, Computer Aided Drafting, College Algebra, Economics, Developmental Reading II, DBase Concepts, Administration of Pre-Schools, American Government)
- Increase faculty awareness and ability to identify diverse student populations and their needs as it relates to learning and teaching by providing national experts in learning styles, information processing, technology, demonstrations, individualized assistance, hands-on use of instructional laboratory materials and technology, etc.

Pearl River Community College Learning Alternatives Program's operational design included three phases of activities.

Phase I: Diversity Of Course Preparedness In Student Population

The Program selected faculty who taught on-level, above-level and below-level courses and offered them the opportunity to participate in an experimental study to select nationally normed tests which would coincide with the concepts taught in two different courses they were assigned to teach--one course in the fall and one course in the spring. Faculty participants were selected based on discipline, level of courses taught, and commitment to the program.

The faculty pre-tested students in an experimental group class section and students in a control group class section using the nationally normed tests for their course discipline. The faculty then offered the experimental group the options of utilizing the Learning Assistance Laboratory and its resources to develop their skills based on the level of concept mastery they demonstrated on the course test. The faculty was aware of the clusters of concept mastery the class profile demonstrated. This allowed the instructor to provide in-depth instruction on weak mastery areas and avoid repetitive work by the students on concepts

mastered. Students were assigned to utilize technology in the laboratory and software packages identified to address their concept area and level. Weekly reports were given to faculty on student performance. This brought technology into the classroom and utilized it as an instructional support aid. The projected outcomes were met. Faculty utilized testing to recognize the differences in course concept preparedness and the technology to allow diversity of levels to be addressed in an effective manner.

Phase II: Student Differences In Learning Perceptions And Information Processing

Twelve faculty from varying disciplines and who were not utilizing technology were chosen to participate in Phase II of the Learning Alternatives Program. The purpose of the phase was to develop an awareness in faculty of student diversity in processing information and in learning perceptions and to develop alternatives in instruction and technology to address the variety of student profiles in on-level, above-level and developmental courses in a variety of disciplines. Faculty participated in training with large group and small instruction from nationally recognized professionals in learning styles and in information processing styles to recognize their instructional and learning profiles and to recognize the differences in student profiles and the impact on the instructional process. Faculty assessed themselves utilizing the Adult Form of the Productivity Environmental Preference Survey and the Information Processing Survey and formulated a profile of themselves. The faculty then participated in technology training to make them literate in the use of the technology in the Learning Assistance Laboratory. The Learning Alternatives faculty group then chose a course and developed alternatives to learning and instruction so students differences would be addressed. The faculty spent the summer developing software, changing course curriculum and syllabi, and developing a plan of action. Faculty worked with peer and Learning Assistance Laboratory staff to refine and prepare their course study and materials. In the fall semester they tested an experimental group using the same instruments used to assess and develop their instructional profile. Each student's survey was scored and an individual and class profile was developed from the results. Students were given their profile results and assigned to use the technology and software in the laboratory to learn how to study, take tests and improve their learning based on their profiles. Faculty tested a control group but gave them no feedback on the results and no learning alternatives. They approached the control class with the same syllabus they had used the previous semester. The experimental class received instruction designed to address different perceptions styles and information process styles both in the classroom and in the instructional support setting of the Learning Assistance Laboratory where software, technology and resources were assigned. Student and instructor outcomes were met and measured. In the spring semester the instructors re-planned and refined the study techniques and technology.

Phase III: Applied Approaches To Academics

The process is now in place to move the group to another level of technology and instructional approaches by implementing applied approaches to academics and learning in the staff development process so students and faculty utilize technology and address diversity of populations.

Mac In The Classroom
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To assist faculty and staff with incorporating computerized science programming into their current instructional methodology, computer literacy workshops were planned. The "Mac In The Classroom" workshops were created to introduce and familiarize faculty and staff with computer basic operational skills and information concerning Interactive Multimedia Computer Presentations for the purpose of instructional enrichment. Computerized lessons further provide statistically measurable means that effectively monitor student academic achievement and outcomes. Sixteen hands-on computer workshops were scheduled.

Instructional planning for the "Mac In The Classroom" workshops specifically targeted the use of popular educational computer software programs. The workshops introduced a computer beginner to the basic information to become functionally literate with the use and operation of the Macintosh computer and with the fundamentals for creating interactive presentations. The following basic tutorial computer software lessons were presented:

- Macintosh Basics Tutorial; Working with Files and Folders
- Using Apple Guide Help and Understanding Mac Terminology
- Working with ClarisWorks 2.1v3 for Education
- Working with MS-Word 6.0
- Working with Word Perfect 3.1
- Working with Programs for Macintosh
- Working with CD-ROM Programs
- Working with Macintosh Programs for Faculty: GradePak, TestPak, QuizPak
- Creating with HyperStudio 2.0
- Creating with MacroMedia Director 4.0
- Protecting the Macintosh with At Ease and SAM Intercept 4.0
- Getting the most from your Macintosh Computer: Working with Norton Utilities 3.1

Interactive MultiMedia is a powerful medium of instruction that allows the teacher to coordinate and develop alternative methods of lesson delivery specific to their courses and to their needs. Each "Mac In The Classroom" workshop provided the computer beginner to make informed decisions using interactive multimedia presentations and computerized lessons in their classroom. The following is an example of a lesson plan from one of the computer basic skills' workshops.

DESCRIPTION:

In a step-by-step format and in non-technical language the workshops provide a survey of the basic functions for using the Apple Macintosh Computer. The student will learn standard system Apple Macintosh Applications: Word Processing, Desktop Publishing, Databases, Spreadsheets, and creating Multimedia Presentations (Graphics and Movies).

OBJECTIVES:

The student will learn how to customize his/her Macintosh system operations and to organize his/her folders, files, and documents. Also the student will learn to back up files, search for lost files, and make printing a smooth operation.

AUDIENCE:

This Apple Macintosh Computer course is intended for beginners to intermediate level who want to work with the computers but do not want to spend the rest of their lives learning about it.

METHODOLOGY:

Lecture, discussion and hands-on computer practice.

The suggested reference text was The Essential Book for All Mac Users; Mac Tips and Tricks, by Caroline Bassett and Guy Sneesby, $14.95 Retail.

Four fundamental learning objectives were achieved and evaluated:

1. Hands-On Experience using the Macintosh Computer
2. Macintosh On-Line Tutorial Programs
3. Macintosh Authorware Programs (program basic skills)
4. Popular Educational Software (program basic skills)

The "Mac In The Classroom" workshops that focused on interactive multimedia creating programs first strive to answer the following questions.

1. What is MultiMedia?
2. What is Interactive MultiMedia?
3. Why should I use computerized multimedia presentations with interactive learning in my classroom or laboratory?
4. Would I use previously created multimedia programs?
5. What is an Authorware program?
6. Could my students and I create our own interactive multimedia presentations with an Authorware program?
7. Where will I find Interactive MultiMedia programs and/or MultiMedia Authorware programs?
8. Which computer platform: CDI, Macintosh or IBM/PC are right for my students and me?
9. What are the computer system specifications and peripherals required to be at a basic level versus near the leading edge of multimedia technology?
10. How much should a basic multimedia computer system and the required multimedia software cost?

A Certificate of Attendance was presented to all faculty and staff who attended the workshops along with an Evaluation Sheet. A summarized view of the evaluations is listed below.

Total/Points	"Mac In The Classroom: Evaluation Questions
50/5	Instructional objectives were clearly stated.
49/5	Instructional objectives were accomplished.
50/5	Instruction was paced and delivered to fit my level of preparation and understanding.
50/5	Instructor was prepared and responsive.
48/5	There were sufficient examples and demonstrations to illustrate concepts.
50/5	Questions were answered sufficiently.
50/5	I was given personal help when requested.
50/5	I would recommend the course to someone else.
397/40	

Graded: 99.25%

Due to the high percentage of workshop effectiveness based from the scores and additional comments, more workshops are planned.

MINNESOTA Center for Academic Technology (The MCAT)
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Contact Person: Cheryl Frank

In 1994, Inver Hills Community College initiated the MCAT in response to the growing need to expose faculty to the impending penetration of technology into college classrooms. Training opportunities in classroom technology are expensive and usually involve additional travel and fees. This initiative was developed to provide faculty with reasonable training opportunities close to their home campuses to enhance diverse learning strategies for students.

The MCAT began offering workshops during the summer of 1994 at the Inver Hills Technology Learning Center located in the skyway in downtown St. Paul. This multimedia enabled facility is equipped with 24 Windows-based stations as well as an instructional station with projection capabilities. All stations are configured with sound and video cards to permit integration of text, audio, graphics and both analog and digital video. The facility also features a T1 line which provides complete access to the Internet on all 25 stations.

The Center currently offers multimedia workshops on Powerpoint, Compel, Toolbook and Authorware to assist faculty in developing interactive classroom presentations. Workshops on Introduction to the Internet and Research Via the Internet are also offered on a regular basis that may lead to new learning

methodologies in the future. The Workshops are two or three days in length and run from 9:00 a.m. to 5:00 p.m.

Since the initial offerings during the summer of 1994, approximately 80 faculty from various colleges in Minnesota and across the region as well as representatives from the business sector have received multimedia training at the MCT. Many of these participants have returned to their respective campuses and are generating exciting new software titles to incorporate into their teaching. They also find themselves mentoring their colleagues as well.

An effort is currently underway to form a well organized users group consisting of MCAT alumni. This group will meet regularly and share software as well as tips and insights on authoring multimedia software to bring back to their home campus.

Dean of Instruction Cheryl Frank along with MCAT staff members Rita Mudd and Dennis O'Melia have presented "The MCAT Story" at The League For Innovation Conference in Houston as well as at regional and state meetings.

The MCAT is well positioned to provide significant training and ongoing support for Minnesota higher education institutions during this time of rapid change.

Providing Staff Development Opportunities
for Developmental Mathematics Adjunct Faculty
State Technical Institute at Memphis
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Contact Person: Cheryl Cleaves

State Technical Institute at Memphis is an urban two-year college that offers the Associate of Applied Science degree for 26 different programs in engineering technology, information technology, and business and related technologies. The total student body includes over 10,000 students with over 1,500 students in the state mandated developmental studies program.

The Developmental Mathematics program has been designed to implement the Standards for Introductory College Mathematics which were developed by the American Mathematical Association of Two-Year Colleges (AMATYC) with collaboration from other professional mathematics and developmental education associations. A strong emphasis is placed on incorporating the use of technology in classroom presentations, in classroom and out-of-class activities, and in supplementary resources available to the students.

The magnitude of the Developmental Mathematics program necessitates the use of a significant number of adjunct faculty. Over 100 sections are offered each fall and spring semester and over 50 sections are offered in the summer. The sixteen full-time faculty members teach approximately 60 percent of these sections while the other 40 percent are taught by adjunct faculty. Extensive professional

development activities are offered for both full-time and adjunct faculty so that a consistent level of quality is maintained in all sections of the program.

The faculty development opportunities place a strong emphasis on active learning strategies, using scientific and graphing calculators to enhance student understanding of mathematical concepts, using technology to facilitate classroom demonstrations, and using technology to enrich out-of-class experiences. The academic year begins with a six-hour in-service program which includes presentations, demonstrations, and hands-on activities that model standards-based pedagogy. Demonstrations and presentations also include informational sessions on the use of computerized software for generating worksheets and tests in a variety of formats and on resources that are available to students and faculty in the Multi-media Skills Center. These activities are presented by both full-time and adjunct faculty and this mini-conference is video taped so that faculty can check out a tape at any time to view presentations from the current or previous in-service programs. This collection of tapes includes presentations on a variety of topics using technology to facilitate classroom demonstration, to introduce mathematical concepts, and to enhance mastery of mathematical skills.

Another major resource provided to all faculty is a locally prepared instructor's guide that includes an explanation of the statewide developmental studies program requirements and the placement program, the department philosophy, course syllabi, reproducible activities, classroom management suggestions, assessment strategies, a collection of relevant journal articles, explanations of departmental resources, and a handbook of college policies for adjunct faculty.

This collaborative spirit is continued through the Academic Partners program which groups full-time and adjunct faculty in year-long informal interaction and sharing. In addition to sharing ideas, successes, and failures, each full-time faculty member facilitates the distribution and collection of departmental equipment and supplies to his or her academic partners. Full-time faculty are regularly funded to attend conferences and seminars sponsored by professional organizations and other colleges. These faculty share their experiences with their colleagues both through informal networking and formal presentations.

Another faculty development activity is offered in the spring term each year. This activity is generally funded through grants to bring in outside consultants who conduct workshops or seminars for both full-time and adjunct faculty and faculty from nearby colleges. For example, technology experts have been scheduled through the Traveling Technologies service offered by AMATYC.

Each faculty developmental activity is evaluated by the participants and input is solicited for planning of future activities. Another measure of the effectiveness of the faculty development efforts is through comparisons of students' evaluations of instruction. The departmental mean is generally higher than the college average and there is little or no difference between the mean of full-time faculty and adjunct faculty.

Teaching and Learning Center (TLC)
Illinois Central College
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Contact Person: Nancy Varness

Illinois Central College, a public community college of 12,400 students (6141 FTE), serves all or part of ten counties, including Peoria, in central Illinois. Committed to meeting the needs of an increasingly diverse community and student body, faculty and staff have recognized the value of careful incorporation of technology into instruction to enhance learning and teaching. We also recognize the challenge of supporting faculty as they learn more about technology and consider how best to include technology applications in their classrooms.

In response to this challenge, the College established the Teaching and Learning Center, or TLC, in August 1994. The TLC is both a place and a program, dedicated to excellence in teaching and learning through a variety of staff development activities. The Center and primary activities are results of an ambitious research project conducted in spring 1993, when all full-time (183) and adjunct (400+) faculty were asked to assess their own use of technology and staff development needs.

As a result, the Center supports faculty by creating networks, resources, and expertise in the areas of instructional design, technology trends, and tools for instructional development. In particular, the TLC encourages and supports the thoughtful incorporation of technology into instruction through technical assistance, workshops, equipment and software, other resources, development of media classrooms, and mini-grants for faculty. Throughout these activities, instructors build networks and share with one another as they continue to teach and learn together.

Members of a faculty advisory committee bring instructional concerns and needs and act as liaisons between the Teaching and Learning Center and other faculty members. The Center is staffed by a Media Specialist, an Instructional Design Specialist, and an Instructional Software Specialist. They provide technical assistance to individuals or groups of faculty who have questions about technology or who are working on instructional projects. They also refer faculty to other instructors with particular expertise or similar ideas or projects so they might work together.

In addition, these Specialists provide a variety of workshops for faculty, both within departments and across the curriculum. For example, recent workshops include "Introduction to the Internet," "Modern Connection: Using Computers to Teach and Learn," "Teaching on the Distance Network," "Using Freelance," "Using ToolBook," "AmiPro Tools," and "Using the Scanner."

The College is embarking on an ambitious plan designed to upgrade technology across the campus and provide new opportunities to incorporate instructional technology. In order to support faculty in this new initiative, TLC staff have designed a simple self-assessment tool for faculty to rate their own expertise. A series of workshops will be designed to meet the expressed faculty needs and will

be offered by a number of trainers to all full-time and all interested adjunct faculty. Workshops include information on operating systems, word processing, spreadsheets, databases, and presentation graphics. Faculty who are assigned computers must participate in this training within six months. Additionally, those planning to use the Internet or the internal e-mail system must complete appropriate training for those tasks. More advanced workshops will follow as faculty express needs.

The Teaching and Learning Center also provides a place where faculty can use various pieces of sophisticated equipment and software. Currently, the Center houses several computers with multimedia capability, an Internet station, and other equipment such as a scanner, video capture equipment, several printers, LCD and overhead projector, and VCR with monitor. The computers there are loaded with software that faculty might need or want to learn, including ToolBook, OmniPage Pro, CorelDraw, Powerpoint, and Harvard Graphics. While other equipment and software programs are available throughout the College, the TLC is a place dedicated to faculty development and discourse about teaching and learning.

To help promote this discourse, the Center houses a variety of other resources for faculty. A growing collection includes video tapes as well as numerous articles and books on the subjects of teaching and learning, instructional design, and technology. Faculty members are also asked to add examples of their own materials and activities to be available to others.

TLC staff, faculty, and other support personnel have worked together to develop several media classrooms, each designed to meet the specific needs of the instructors who teach there. Some of these classrooms are also equipped for distance learning, with interactive audio and video to enable students at more than one site to participate fully in the class. TLC staff provide training for instructors who teach in all these rooms; faculty plan and present sample lessons to their colleagues in these workshops, using the technology to enhance instruction.

Mini-grants are available to faculty who plan and submit proposals for a variety of projects, particularly ones involving technology. TLC staff review applications, recommend revisions and funding, and then work with the faculty who undertake these projects. Since mini-grants were first offered in April 1993, faculty have submitted more than fifty proposals for projects that include technology, ranging from computer-assisted development of handouts to full-scale multimedia student tutorials. Originally funded by a federal grant, mini-grants are now part of the College budget. Faculty who complete projects share both the process and the results with colleagues through a variety of means, including publication in the College house newsletter, mini-grant "showcases," department meetings, and workshops.

Established to meet the expressed needs of faculty who wanted opportunities to learn more about using technology in the classroom, the Teaching and Learning Center continuously assesses needs and delivery of activities and services. Requests for TLC activities increase dramatically each semester, and faculty participation grows as well. Since the TLC opened, faculty requests for more equipment and software have increased so much that the administration and Board of Trustees are responding with a $2.1 million technology plan for next year.

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During the late 1980s, we became increasingly aware that, as an institution, we were not effectively keeping up with advances in technology that were occurring. At the same time, we had a vision to create a faculty center focused exclusively on teaching and learning. Taking advantage of an opportunity to apply for Title III funds to provide the equipment and expertise we were lacking to make our vision a reality, we opened the North Seattle Community College Teaching and Learning Center in 1991.

The mission of the Teaching and Learning Center (TLC) is to provide faculty with a safe environment to learn technology to enhance and expand classroom learning activities, exchange and discuss ideas about philosophies and techniques of instruction, and explore the frontiers of their profession.

The TLC has evolved from a one-room lab with five workstations to a comprehensive center of faculty development. Today, the TLC is located on the first floor of the College Center Building and incorporates four components, including: a fully networked twelve-station classroom utilizing PowerMacs equipped with DOS compatibility cards and video projection equipment; a faculty lab comprised of eight multimedia workstations, a color printer and three scanners; a seminar room; and a faculty lounge. Throughout the TLC, workstations are connected to our district network and Internet. A variety of software, including MS Office, AuthorWare, PageMaker, PhotoShop, and Optical Character Recognition (for scanning text), is available. Although the TLC does have a small staff, it is the sizable contingent of faculty members who work either on a stipend or volunteer basis that makes the center truly instruction based. There are currently faculty members from all divisions working or volunteering in the TLC.

Many different kinds of services and information are available in the TLC. Every quarter we offer a wide variety of classes ranging from general introductions to focused sessions, including discipline-specific workshops. There are also clinics, such as the Monday afternoon HomePage clinic, and one-on-one consulting done by appointment or drop-in basis. TLC staff also recently added office visits to their list of services to accommodate faculty in their own office environments.

One thing that has been particularly exciting about the development of the TLC is the fact that it has become a truly comprehensive center for not only the integration of technology into our lives, but also for real improvement of teaching and learning. While the total accomplishments of the TLC are too numerous to list here, following are three of the more successful and creative developments to come out of the TLC.

1. The CITIES classroom project, co-sponsored by the Microsoft Corporation, was designed to bring computers and connectivity into the classroom. Students

use technology in an interdisciplinary environment to conduct Internet research, communicate with each other, and communicate with the team of instructors. Faculty participating in the CITIES project are able to take advantage of the expertise and equipment available in the TLC to prepare for the rigorous demands of teaching in this program. Although we have learned from participating faculty that the level of student engagement is high, we initiated an assessment project in January 1996 that will show us the positive impact of this program in a quantitative way as well. In general, we know that students in multimedia classes perform somewhat better than their counterparts in traditional courses. We are currently conducting a comparative study in our foreign languages department to weigh student grades in courses utilizing instructional technology against grades in those courses not using any technology.

2. Use of faculty products in the Loft Writing Center Plus has grown steadily since the opening of the TLC. With the equipment and expertise available in the TLC, nine faculty have created software programs using Hypercard AuthorWare that are now available for students to use in the Loft multimedia lab. Although the faculty authored software is typically designed for specific levels, it is available to all students in the lab. Student success and attendance continue to rise as we add homegrown products. From student feedback, we know that the faculty products continue to be among the most popular items in the lab. They also contribute to a high correlation between classroom activity and instructional services available to support teaching and learning at our institution.

3. The TLC's Internet and World Wide Web series have been particularly successful in attracting large volumes of participants and impacting the way we go about the business of instruction. In the current year, more than 300 individuals have attended scheduled offerings. This massive exposure has led to several changes, including a major increase in the number of faculty conducting on-line research, and improved communication among faculty and between faculty and students. Several full- and part-time faculty have created homepages that include on-line syllabi and relevant links for students to pursue. The success of this series is largely due to our continued focus on the use and relevancy of technology to instructional applications. We believe participation in this area will continue to grow exponentially.

The TLC is gaining exposure off campus as well as on. In September 1995, a delegation of European higher education officials visited the TLC while in Seattle for a conference. Later that fall, they invited the faculty coordinator of the TLC and our lead technical staff person on a ten-day, all expenses paid demonstration tour in England. Faculty have also had the opportunity to share information about the TLC at national conferences, most recently at the national Title III conference in Washington, DC.

We feel strongly that the TLC has affected our campus in a real and positive way. It has enabled us to lead our faculty and staff through an amazingly complex and rapidly changing technological environment while maintaining our focus on improvement of instruction. By using the TLC, faculty gain the confidence, technical knowledge, skills and input from others they need to continue to improve their instructional activities in a world that is constantly changing.

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In its second year of operation, the Technology Associates Program at Central Piedmont Community College is a means whereby the college is systematically including technology into teaching/learning environments. With 340 full-time and more than 1100 part-time instructors teaching quarterly and with limited resources for providing those faculty with technology for their classrooms, the College determined to initiate a program so that the most interested faculty would be encouraged to innovate for the benefit of student learning. CPCC has ten years experience in interactive video instruction, but needs to produce other learning options for students including Internet courses, video courses, CD-ROM and computer-aided courses, e-mail based local courses, and stand-alone video courses. The Director of Learning Resources and the Assistant to the Vice President for Instruction during 1993 spent time examining ways in which other institutions had encouraged technology integration into the instructional program and brought a proposal for the Technology Associates Program to the College Cabinet in Spring 1994. Following Cabinet endorsement, the program was established and implemented in Fall 1995.

With auxiliary (bookstore) funding, the first six Technology Associates were selected following interested faculty having submitted proposals to a Selection Committee of their peers. These TA's were given lap-top computers, docking stations in an upfitted classroom, a week of intensive training in computer assisted instruction at the Institute for Advanced Technology at The University of North Carolina, a one class reduced load per quarter, and technical assistance through the Teaching Learning Center at the College. The six faculty members have produced course materials that include the utilization of presentation software to enhance the learning skills of learning disabled students in reading comprehension; a presentation software and/or writing/learning center support instruction for interactive essay writing (which guides students through brainstorming), thesis and topic-sentence development, and basic paragraph organization, including structure, format, and critical thinking skills; an instructional presentation program to introduce specific applications of the HP48GX calculator for civil engineering and surveying students; updating and development of major printing courses through the creation of industry survey instruments and the utilization of instruction performance software; and adaptation and development of computerized software to assess French speaking and listening skills with the development of a CD-ROM multimedia program using interactive picture, sound, graphic and video segments to improve student participation in learning French language and culture.

The campus interest and enthusiasm for the Tech Associates program was such that the College began to explore increased funding. It was determined that the Tech Associates program would become the key activity for a Title III grant, written in Summer 1995. The grant included the expansion of the program to additional faculty and the upfitting of the college television studio with equipment

to allow for the integration of computer-based instruction methodologies within video courses.

Following news of the funding of Title III at 1.5 million dollars over five years, a second group of Tech Associates has been selected, this time from a group of 21 applicants. The 12 are in the process of developing a joint technology project during the current academic year: an 11-hour module of instruction on the subject of "orientation to work settings." Through a strategic master planning process completed by the College in 1995, it was discovered that potential employers of CPCC students want them to be better prepared for the workplace with appropriate skills for successful employment: punctuality and consistent attendance at work; a commitment to the work of the business/industry who hired them; an understanding of the free enterprise system; appropriate dress and work behavior; a positive attitude. Each Tech Associate is planning, developing, and producing one of the 11 modules through the use of video and computer-assisted instruction. The modules can be used together for a one quarter credit course, segmented and infused into existing curriculum or transported to work sites for non-credit instruction.

In addition to the lap-top computer, training, and support provided to the first year Tech Associates, the second year recipients, thanks to the Title III grant, receive help from a technician to aid the faculty and video studio staff in determining and producing course materials most appropriate for the needs of students today. Following the completion of the "orientation to work settings" course, the Associates will complete projects from their own disciplines: adult basic literacy, electricity, speech, architecture, horticulture, graphic arts, interpreting, technology, commercial art, health, and history.

The program is innovative and creative: The Tech Associates program allows for the creativity of faculty to find focus through the infusion of technology into the classroom to improve student learning. Wide ranging through the disciplines which the College teaches, the program allows not only for 18 subject areas to be directly impacted, but also has spill-over implications as the faculty share their materials and enthusiasm with peers.

The program can provide measures of success: Student results/evaluation of all developed course revisions/materials are being gathered for comparison with traditional classroom methodologies. A less specifically focused measure will be through the increased use of teaching-enhancing technology within classroom and distance education settings.

The program could be adopted by others: CPCC started the program with internal auxiliary funds and a small amount of released time for the original faculty, then sought outside funding. Any college could conceivably accomplish the same. The program is simple, faculty-driven, and requires little administrative time.

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A major problem identified in TCL's Institutional Effectiveness Process by faculty was inadequate instruction and obsolete classrooms demonstrated by the ever-increasing gap in "learning technology," between what business is realizing with the latest knowledge-based technology and the instructional capabilities of the College. To move from the College's present state to where it must be to meet the needs of students in our service area requires a "re-engineering and revitalization road map"--a complete shift in the current paradigm. Such a shift requires movement from the production of teaching to the production of learning. Faculty become designers of learning experiences and environments; students and staff become more accountable for learning outcomes and the quality of the learning experience respectively.

The overarching purpose of TCL's staff development program, "Training, Time and Technology" (T3) is to increase faculty technology skills and encourage their frequent use. The result will be improved student achievement and retention in the College's programs. Essential to the process is the provision of time for learning new technologies, developing materials, and implementing and revising the learning paradigm. To decrease perceived barriers in using technology, faculty have access to the hardware and software tools necessary for developing and creating multimedia instructional presentations. These support items are available in the Learning Place, a 25-station multi-media computer lab, and the Learning Solutions Center, a parallel teachers' resource room.

To prepare the faculty to effectively utilize the technology, a corps of five faculty members, one from each academic department, were identified as "Training Champions." Each received release time to work with the College's Curriculum Design Specialist to become proficient in the use of the technologies and to develop a curriculum project utilizing newly acquired skills in their discipline. Each Training Champion then becomes the trainer for peers in his/her department. In addition, the Training Champions designed and are instructors for a series of hands-on workshops for the College staff. Topics include such things as Microsoft Office, Internet, and the use of presentation software like Powerpoint. These workshops are offered on a cyclical schedule to insure that all faculty and staff have access to the training needed to remain current in technology applications related to their field.

The Technical College of the Lowcountry's faculty development program provides a systematic, cost-effective way for faculty/staff to learn how to utilize technology in a variety of ways to enhance the teaching and learning environment. Enabling the faculty to learn and to utilize technology in a non-threatening environment and relate it directly to their instructional practices creates an environment in which teachers as learners become more effective teachers.

T3 is an innovative and creative staff development program designed and implemented by TCL's faculty. It enables faculty to be curious about the materials available in their academic area and to explore their many applications. This initiative creates and sustains a learning process by all participants. The measure of T3's success is greater use of a variety of teaching methodologies and increased learning for students.

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The Vision and Assessment Center for Information Technology (VAC-IT) on the Northeast Campus of Tarrant County Junior College is truly an example of a faculty driven and faculty supported program. Designed to aid faculty and staff in learning more about computers or computer software and creating professional presentations, the Center operates on a spirit of cooperation and an enthusiasm to share ideas. Housed in the library, the Center receives funding from all three academic divisions, maintenance support from Management Information Services, training classes and some equipment from Community Services, technical support and supplies from Instructional Media, support from administration, and volunteer help from faculty and staff across the campus.

In Fall 1992, the Tarrant County Junior College Chancellor named a District-wide faculty committee to study academic computing. That spring, one of the committee's recommendations was to establish a faculty development area on each campus for individual faculty members to work on projects and to evaluate hardware and software. The next Fall, based on that faculty recommendation, Dr. Herman Crow, president of Tarrant County Junior College Northeast Campus, created the VAC-IT, the only center of its kind within the District. The Center provides a place for faculty

- to work on group or individual curriculum projects.
- to evaluate high-tech hardware and software.
- to learn how to use high technology in the classroom.
- to attend small group workshops/seminars.
- to develop strategies that identify creative and effective methods for the use of computer technology in the teaching and learning process.

The Center opened in the spring of 1994 under the direction of a Vision and Assessment Team. Composed of two faculty representatives from each academic division and one division chair, the team helps develop programs and activities for the Center, assists faculty in determining needs for computer resources, assists faculty and staff in using computers, and publishes a newsletter to inform the faculty/staff of courses, new software/hardware, faculty accomplishments, and

production aids. The VAC-IT Team serves as a liaison between the faculty and administration, providing a communication link for faculty to the administration on technical issues.

The Center currently offers two IBM and three Macintosh computers equipped for full multimedia capabilities, two color inkjet printers, three laser printers, two color scanners, a 35mm slide maker, removable hard drives for extra storage of data, and a digital camera. Software includes PowerPoint, Corel Draw, Director, Authorware, Abobe Illustrator, Astound, and Word Perfect. The Center also has a CD-Rom collection designed for both the IBM and Macintosh and various reference books on both software and hardware. In addition, the Campus has purchased six IBM and Macintosh laptop computers for faculty checkout to be used in the classroom, for off-campus presentations, or even for work at home.

Operating on the library's schedule, the Center is available for all full- or part-time faculty and staff. Supplies are provided by the college with diskettes being the only individual expense. Faculty appreciate the opportunity to work on projects without an individual outlay of money for personal equipment and software. The VAC-IT provides a chance to try out expensive equipment and programs before making a personal expenditure. Furthermore, faculty can produce materials in a shorter framework than relying on District graphics personnel and have total control over design and content.

Moreover, over one hundred faculty members have completed professional development courses as well as short seminars or workshops on the use of multimedia software and hardware. Courses are taught by computer science faculty and others who have developed expertise in the various multimedia software programs. In addition, individual faculty members present seminars on techniques, software, or hardware that they have found to be particularly useful or effective. To show his commitment to the Center, Dr. Crow granted released time to one faculty member for original demonstrations and teachings. The Center continues to sponsor an on-going schedule of classes, seminars, and sharing sessions, all prompted by faculty/staff request and interest.

During summer 1994, the President also provided released time for two faculty members (one from English and one from natural sciences) to produce multimedia presentations for their courses. Using skills obtained through the professional development program and equipment in the VAC-IT, the two produced over 500 color transparencies and created animated lessons for developmental English and anatomy and physiology courses. Since the Center's inception, numerous other faculty members have designed color transparencies, animated presentations, and slide presentations for their classes, professional organizations, or colleagues.

Designed as a work area, the Center has become an excellent location for faculty sharing and learning. While one faculty member is working on a project, another may be looking over that individual's shoulder learning more about the computer or the software applications. When two or more faculty members are producing, they ask advice, offer suggestions, or serve as editors. Faculty have discovered new resources as well as new information--not only on computers, but also in other disciplines.

Faculty who have used the facilities to produce materials for their courses and other presentations report better interest in and retention of information from the audience. Enthralled with the multimedia presentations, students attend classes more regularly, provide fewer distractions, contribute more to class discussions, and don't watch the clock. The Center's success is further evidenced by the requests for more computers because of the increased demand from faculty and staff for computer time and for more courses designed specifically for faculty.

World Community College
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Americans live increasingly in a global environment that demands focus and attention for survival. Linking people through on-line education extends the ability to share information and grow in knowledge and capabilities.

To develop this concept, the Community Colleges for International Development (CCID) has embarked on a joint venture with the Electronic University Network (EUN) to create WCC.

Any college can become a "World Community College" by adopting the interactive approaches that characterize on-line work and linking to the changing world in which all must operate. World Community College is an idea that has gradually grown from early distance learning concepts to utilization of the technology now available to a majority of Americans and a growing number of people in nearly every country of the world. Access to information is the power base of society, and bringing education to people everywhere is WCC's mission.

WCC is a consortium of colleges that offers the entire spectrum of educational programs and services "on-line" through what is called a "virtual" campus. Using computers and the telephone system, World Community College will bring the college campus to the student--on the desktop at work, the tabletop at home, or the laptop while traveling--anywhere in the world. The virtual campus will provide all the services of any "real" campus--classrooms, library, student services, financial aid, faculty offices, lecture halls, lounges--using books, tapes, computers, CD-ROM, video, graphics, and the worldwide telephone network. It will provide access to every aspect of a traditional college, without the buildings, the classrooms, the equipment, or any of the physical plant.

Certain elements are fundamental to World Community College:

- An on-line network that links all members, students, and other participants.
- International Study Centers from which WCC operations can be conducted for local in-country contact and training.

- Learning Contracts that provide individualized, flexible programs of study that maintain academic quality.
- Methods for establishing equivalence for transfer credits, including portfolio assessment and credit for experience.

World Community College will permit participating colleges to implement a variety of programs and activities that enrich and enlarge current capabilities:

- Methods for interactive teaching and learning that take full advantage of new telecommunications capabilities.
- An increased presence in the community for access to the virtual campus by the disabled, the homebound, the traveler, and the worker.
- New institutional relationships that strengthen old partnerships and create new ones, often with non-traditional organizations.

World Community College will also provide a host of services not readily available to students in isolated regions or areas where the number of interested people does not permit offering specialized programs. The virtual classroom exists in the form of written dialog, saved on the disk drive of every participant and available at any time from the on-line service. The WCC library is never closed, and although the faculty and counselors keep business hours for "real-time chat" (technical talk for synchronous communication where both people must be on-line at the same time.) WCC students can leave questions whenever they think of them and return later for personal on-line written replies responsive to their specific needs.

Participants can also enter into dialog with other students in their own programs, students from other programs, other faculty, college staff and administrators, or anyone else at the college with whom they need to make contact. This is the most powerful aspect of this medium and the one that distinguishes it from both the traditional classroom setting and our present distance learning modes.

This is the Age of Transformation--of continual re-engineering, re-structuring, and reinventing organizations and institutions--with growing needs for information access and better communications.

It is a concept that affirms two essential roles of community colleges: looking inward to meet traditional community educational needs, and looking outward to link businesses and institutions globally.

Employers will have more options, including customized workplace training that can use individual employee workstations or common sites where each student "logs on" at a time most convenient to those involved. The savings from educational travel that is no longer required will be enough to persuade many companies to provide tuition reimbursement through this medium for all types of study programs.

For the college, there are obvious advantages in savings for facilities and lower costs for on-line delivery of programs. For example, faculty development can now be carried out on a continuous basis, with discipline experts on one campus in touch with world experts using on-line e-mail, private forums, public-events, or one-on-one structured exchanges.

Through World Community College, education becomes truly a lifelong learning process without the costs of travel and schedule disruption that are required when students and faculty must meet together in a single place and at a predetermined time on a regular basis.

From the college perspective, there will be costs in development time for faculty and staff to convert or create curricula suitable for on-line delivery, as well as the cost of training faculty and staff in the use of this medium. There will be equipment costs and additional infrastructure costs for local area networks or other arrangements to bring faculty "on-line" if that is not already possible. However, these expenses must be evaluated in terms of the gains they bring in skill renewal, improved morale, greater productivity, creativity, access to educational resources, and avoidance of costs that would have been required to provide similar resources through alternative means.

Using interactive techniques and the virtual campus, WCC combines the best aspects of self-directed study, freedom of choice, and personal responsibility, without sacrificing the quality of education, technological or pedagogical leadership. Best of all, we can reach our colleagues and students at any time, any place in the world.

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ABOUT NCIA

The National Council of Instructional Administrators (NCIA) is a private, nonprofit, professional organization affiliated with the American Association of Community Colleges (AACC). With membership in two-year institutions across the nation and Canada of over 3500, the NCIA is the largest such affiliated council.

Committed to leadership, innovation, advocacy, and development for the improvement of teaching and learning, NCIA is the national voice for the opinions and concerns of administrators of instructional programs in two-year colleges. The Council is consulted by the leadership of the American Association of Community Colleges and by other national organizations on matters of importance regarding instructional programs.

In addition to a volume of Exemplary Instructional Programs, NCIA publishes a quarterly newsletter, and, on a periodic basis, literature searches on vital instructional topics. Regional and state workshops are sponsored, and major presentations are made at various annual conventions including the annual AACC meeting.

Persons interested in membership in NCIA may:

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